

**EFFECTIVENESS OF VIRTUAL REALITY THERAPY UPON INSOMNIA  
AMONG SCHIZOPHRENIC CLIENTS**

**BY  
S.SHILPA JABEEN**

**A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R MEDICAL  
UNIVERSITY, CHENNAI, IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF  
MASTER OF SCIENCE IN NURSING  
OCTOBER 2016**

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AMONG SCHIZOPHRENIC CLIENTS**

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**OCTOBER 2016**

## **DECLARATION**

I hereby declare that the present dissertation entitled “**A Pre Experimental Study to Assess The Effectiveness of Virtual Reality Therapy upon insomnia among Schizophrenic Clients**” is the outcome of the original research work undertaken and carried out by me, under the guidance of **Dr. Latha Venkatesan, M.Sc (N), Ph.D (N), Principal**, Apollo College of Nursing and **Dr. Vijayalakshmi. K M.Sc (N) M.A. (Psy), MBA, Ph.D (N)** Head of Mental Health Nursing Department, Apollo College of Nursing, Chennai.

I also declare that the material of this has not found in any way, the basis for the award of any degree or diploma in this university or any other universities.

**M.SC (N) II Year Student**

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## **SYNOPSIS**

### **Statement Of The Problem**

A pre experimental study to assess the effectiveness of virtual reality therapy upon insomnia among schizophrenic clients at selected home for schizophrenic clients, Chennai.

### **Objectives of the study**

1. To assess the level of insomnia among schizophrenic clients before and after virtual reality therapy.
2. To assess the effectiveness of virtual reality therapy by comparing the level of insomnia among schizophrenic clients before and after virtual reality therapy.
3. To determine the level of satisfaction in schizophrenic clients regarding Virtual Reality Therapy.
4. To find out the association between selected variables and level of insomnia among schizophrenic clients before and after Virtual Reality Therapy.

The study was carried out upon 30 schizophrenic clients Chennai. Tools such as Demographic variable proforma, Clinical variable proforma, Insomnia severity index and Rating scale on level of satisfaction of virtual reality therapy were used by the researcher to collect the data. The validity was obtained from various experts and reliability of the tool was cronbach's alpha  $r = 0.78$ . The main study was conducted after the pilot study.

The level of insomnia was assessed before and after virtual reality therapy using insomnia severity index in the group of schizophrenic clients. Virtual reality therapy

was administered every day morning 5 – 7 minutes for the period of two weeks for each schizophrenic clients. After two weeks, the level of insomnia was assessed by using insomnia severity index among the schizophrenic clients. Then the level of satisfaction on virtual reality therapy was also assessed by using satisfactory scale. The data obtained were analysed using Descriptive and Inferential statistics.

### **Major Findings of the Study**

The study results that a majority of the schizophrenic patients were aged between 31-40 years (90%), female (73.3%), un married (66.6%), Hindus (90%), with >20,000 monthly incomes (66.6%).

This study indicates that majority of the schizophrenic clients did not have any medical illness (83.3%), most of their onset of illness is between 20-30 yrs of age (50%), duration of hospitalization is 2-3 yrs (43.3%) and did not practice any relaxation therapy (66.6%).

The study indicates that all of them had moderate clinical insomnia before virtual Reality therapy, whereas after virtual reality therapy, none of them (0%) had significant insomnia. These results can be attributed to the effectiveness of virtual reality therapy. Hence the null hypothesis  $H_{01}$  was rejected.

The insomnia score in schizophrenic clients, before the therapy was high ( $M = 18.3$ ,  $SD = 4.18$ ) and after therapy, it found to be less ( $M = 3.03$ ,  $SD = 2.68$ ), which is statistically proven to be significant ( $P < 0.001$ ). Hence, the null hypothesis  $H_{01}$  was rejected. The reduction in the insomnia after the therapy can be attributed to the

Virtual reality therapy. Therefore, it can be used as an effective intervention for the clinical treatment of psychological disorder.

The researcher found that, the majority of the schizophrenic clients were highly satisfied (86%) with virtual reality therapy.

It is found that there was no significant association between the level of insomnia and the selected variables of the schizophrenic patients. Hence the null hypothesis was retained.

### **Recommendations**

- The study could be conducted on larger samples for better generalization.
- The study could be replicated in other setting like the community and hospitals etc.
- A time series design can be conducted with an interval of 2, 4 and 6 months to assess the long term effects of virtual reality therapy upon insomnia.
- A study can be conducted to assess the effectiveness of virtual reality therapy on psychological wellbeing and quality of life among the schizophrenic clients.



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# **CHAPTER I**

## **INTRODUCTION**

### **Background of the Study**

“If you lie down, you will not be afraid; when you lie down, your sleep will be sweet”

-Solomon

Schizophrenia is the most severe form of chronic mental disorder requiring long term treatment. The term schizophrenia was coined in 1908 by the Swiss psychiatrist Eugene Bleuler. The word is derived from the Greek words schizo (split) and phren (mind). Schizophrenia is defined as the disturbances in thinking marked by alteration of concept formation, which may lead to misinterpretation of reality, hallucination & delusion. Bleuler explained split occurred between the cognitive and emotional aspects of the personality, in schizophrenia (Townsend, 2009).

Schizophrenia is a mental illness that is typified by debilitating symptoms of disordered thought, behaviour, and emotions. The illness affects approximately 1% of the world's population and accounts for 1-2% of national healthcare costs in industrial countries (Stone and Faraone, 1999).

Individuals with schizophrenia require long term integrated treatment with pharmacological and other interventions. Some of these include individual psychotherapy, group therapy, family therapy, social therapy and assertive community treatment. Along with these interventions, virtual reality therapy has been the recently added as the most effective intervention for schizophrenic clients, especially to improve

the sleep pattern level. The most effective treatment appears to be a combination of psychotropic medication and psychosocial therapy (Albus, 2006).

Insomnia is also a major issue for the schizophrenic clients and most of the health problems originate from insomnia. Reaction of persons to insomnia has several manifestations. Schizophrenic patients often face a loss of identity. Insomnia is due to a result of a minor problem but since the reflexes are slower, the individual often does not know how to handle it. Insomnia is a relative term and depends on the condition of the person.

Thus it is important for the mental health professionals to take measures for improving the quality of sleep among schizophrenic clients for which there are various psychosocial interventions such as music therapy, yoga, meditation, virtual reality therapy etc.,(Hirshkowitz, 2004).

Virtual reality therapy is one of the important interventions which helps the Schizophrenic clients to improve their sleep pattern. The use of virtual reality therapy is an interactive immersive computer environment that helps one of the key variables in understanding psychosis and social environment to be controlled providing exciting application to research and treatment. A computer generated an image a display system presents the sensory information and a tracker feedback is for the user's position and orientation in order to update the image. The elements are combined to generate sense data from the natural world with sense data about an imaginary world that change in response to the user's action. The results are a sense of presence in an interactive 3dimensional virtual world (Friedman, 2005).

The virtual reality therapy helps improvement of the co-ordination between mind and body. Exercise in reality affects many regions in the nervous system and sets on the pleasure chemicals such as serotonin and dopamine that induce calmness, happiness and a sense of liberty in patients. The benefits of virtual reality therapy include stimulation of sleep, improvement in memory, concentration and motor activity. It also improves sleep during nights (Eilig,2003).

### **Need For the Study**

Schizophrenia is the most severe form of chronic mental disorder, requiring long term treatment. Of all the mental illness that cause suffering in society is schizophrenia as the worst. Schizophrenia probably is responsible for larger hospitalization, greater chaos in family life, more exorbitant costs to individuals and governments and more fears than any other. In view of the enormous threat to life and happiness and as an unsolved puzzle, it has probably been studied more than any other mental disorder (Townsend, 2010).

Schizophrenia is perhaps the most enigmatic and tragic disease to be handled by psychiatrists and perhaps also the most devastating. It is one of the leading causes of disability among young adults. Schizophrenia is a severe psychiatric disorder affecting 1% of the population. It is characterized by multiplicity of symptoms arising from all domains of mental functioning, e.g. language, emotion, motor activity, and perception (Anderson, 2003).

Insomnia is the most common symptom in Schizophrenic clients, but undertreated. Its prevalence is variable and depends on the type and severity of the episode. Insomnia



observed in the Schizophrenic clients is often similar what is observed in other mentally ill clients, but can be masked and difficult to recognize, particularly, in distinguishing late onset insomnia and early one too. Better and more meaningful discrimination between them appears necessary according to therapeutic response and prognosis. Risk of dementia after insomnia seems to be related with type of insomnia episode and with the treatment efficacy (Clemet, 2008).

Hofstetter(2003), stated that clients suffering from insomnia tend to have functional impairment and need significant health care services. Failure to recognize and treat insomnia in later life can lead to increased need for health care usage, and mortality associated with both medical illness and physical problems.

Complementary and psychosocial interventions used for insomnia are wide spread split variations in patterns of use. A series of systematic reviews provide a summary current evidence for acupuncture, aromatherapy, massage, homeopathy, meditation, reflexology, herbal medicine, yoga, several dietary supplements, relaxation techniques and virtual reality therapy which help improvement in the sleep pattern. The quantity and quality of individual studies vary widely, but research interest in complementary therapies is increasing. Major questions are still to be answered with respect to the effectiveness and appropriate role of these therapies in the management of insomnia.

Virtual reality therapy is one of the important psychosocial interventions which play an important role in the attention, concentration and psychomotor skill development by engaging the patient in the virtual reality to recognize their physical

presence before the behavioral performance. Virtual reality therapy had a great role in improving the sleep in insomnia clients (Allen,2002).

Kinetic adventure compact disc is one of the virtual reality therapy games which can be administered to Schizophrenic clients as it helps to reduce stress, depression, anxiety and improves cognition and sleep level. It is a 2010 sports video game for the Xbox 360, which utilizes a kinetic motion camera and is included as a pack in the game with a device. It was officially introduced at the 2010 electronic entertainment expo in Los Angeles. The game is a collection of five adventures and sports mini games and was developed by a good science studio, a subsidiary of Microsoft game studios.

Kinetic adventure game package is one of the most effective virtual reality therapy games which include various games like 20,000 leaks, river rush, reflex ridge, space pop. Among them 20,000 leaks games are the most effective sleep pattern for schizophrenic clients. In 20,000 Leaks, the player's avatar is in a glass cube underwater. The player positions his or her limbs and head to plug cracks as crabs, fish, and bosses such as sharks and swordfish cause cracks and holes in the cube. As difficulty increases, up to five leaks must be plugged at a time to earn Adventure pins. Each game consists of three waves, which end with expiry of indicated time or when all leaks are plugged. Extra time left over at the end of each wave is added to the Adventure pin total (Butlers, 2009).

This game allows the client to think well and motivates interest to gain more points than other clients among the group. It triggers active participation and competitive attention. This helps the schizophrenic clients in improving their sleep

pattern. Thus despite the presence of various therapies useful in reducing insomnia, virtual reality therapy is found to be useful for improving the attention, concentration and body, mind co-ordination among patients ,however there is paucity of research in this area, especially on insomnia among schizophrenic clients. Hence the investigator has undertaken this study for assessing the effectiveness of virtual reality therapy upon insomnia among schizophrenic clients.

### **Statement of the problem**

A pre experimental study to assess the effectiveness of virtual reality therapy upon insomnia among schizophrenic clients at selected home for schizophrenic clients, Chennai.

### **Objectives of the study**

1. To assess the level of insomnia among schizophrenic clients before and after virtual reality therapy.
2. To assess the effectiveness of virtual reality therapy by comparing the level of insomnia among schizophrenic clients before and after virtual reality therapy.
3. To determine the level of satisfaction in schizophrenic clients regarding Virtual Reality Therapy.
4. To find out the association between selected variables and level of insomnia among schizophrenic clients before and after Virtual Reality Therapy.

## **Conceptual Definitions and Operational Definitions**

### **Effectiveness**

The degree to which objectives are achieved and to the extent to which targeted problems are solved (Oxford dictionary). In this study, effectiveness refers to the significant improvement in sleep pattern level after providing virtual reality therapy in schizophrenic clients as evidenced by improvement in the sleep pattern as measured by insomnia severity index.

### **Virtual Reality Therapy**

Virtual Reality Therapy is also known as virtual reality immersion therapy. It uses specially programmed computers, visual immersion devices and artificially created environments to give the patient a simulated experience. In this study, the participants become a part of virtual world or in a therapeutic environment involved for performing a series of actions displayed on the screen and there by the person experiences a realistic situation. This intervention is made by appropriate movements made for the individual depending upon the task, designed in reality. It is administered for 5-7 minutes every day for 6 consecutive days for each client individually.

### **Insomnia**

Insomnia is a sleep disorder in which there is an inability to fall asleep or to stay asleep as long as desired (Oxford dictionary). In this study, Insomnia refers to sleep pattern disturbance which is expressed through verbal and non-verbal responses by the

patients describing the inability to fall asleep with frequent interruption between sleep and no satisfaction of sleep as measured by Insomnia severity index.

### **Schizophrenic clients**

A group of persons suffering from mental illness characterized by specific psychological symptoms leading to disorganization of the personality of an individual. The symptoms interfere mainly with the patient's thinking, emotions and behavior as a whole and diagnosed as schizophrenia by the psychiatrist.

### **Satisfaction**

It is a feeling of gratification attained or achieved by clients. In this study it refers to gratification attained by or achieved by clients with virtual reality therapy as measured by satisfaction scale of virtual reality therapy developed by researcher.

### **Assumptions**

- Schizophrenia is one of the devastating mental illnesses.
- Insomnia is very common in schizophrenic clients.
- Due to alteration in the sleep pattern there is an impaired role of functions in the schools, jobs and families in schizophrenic clients.
- A majority of the beds in mental hospitals and psychiatric wards in general hospital are occupied by schizophrenic clients.

### **Null Hypothesis**

- Ho<sub>1</sub>** There will be no significant difference in the level of insomnia among Schizophrenic clients before and after administration of virtual reality therapy.
- Ho<sub>2</sub>** There will be no significant association between selected variables and level of insomnia among Schizophrenic clients before and after the virtual reality therapy.

### **Delimitations**

- Data collection was limited to 4 weeks only.
- Study participants were confined to schizophrenic clients who are admitted in the selected home.

### **Conceptual frame work of the study**

**(Peplau's Interpersonal Mode,1952)**

A framework is a group of concepts and set of propositions that spell out the relationship between them. Their overall purpose is to make scientific findings meaningful and generalized.

The conceptual framework for a particular study is the abstract, logical structure that enables the researcher to link the findings to the body of nursing knowledge.

The conceptual framework deals with the inter-related concepts that are assembled together in some rational schemes by virtue of their relevance to a common theme (Polit and Beck, 2012).

The present study aims at describing the effectiveness of virtual reality therapy upon insomnia among schizophrenic clients at a selected schizophrenic home. The conceptual framework of the study is based on "Peplau's Interpersonal Model" (1952). According to Hildegard Peplau, "the goals of nursing are currently in transition, its major concern fifty years ago had to do with getting sick people well, today, nursing is more concerned with ways for helping people to stay well". The model views of nursing are in two ways. Firstly, nursing is educative. Secondly, nursing is therapeutic. With these two functions combined, they allow nurses and clients to develop skills for problem solving. This process of education and 13 therapeutic interactions occurs only within the relationship of the nurse and the client. This interpersonal relationship between the nurse investigator and the schizophrenic clients has four clearly discernible phases. Therapeutic interaction occurs only within the relationship of the nurse and the client. This interpersonal relationship between the nurse investigator and the schizophrenic clients has four clearly discernible phases. These phases are orientation, identification, exploitation and resolution. Each of these phases are seen as being interlocking and requiring overlapping roles and functions as the nurse and the schizophrenic clients learn to work together to resolve difficulties in relation to health problems.

### **Orientation**

The schizophrenic clients and the nurse investigator come together as strangers meeting for the first time. During this phase, the development of trust and empowerment of the schizophrenic clients were primary considerations. The nurse investigator encouraged the schizophrenic clients to participate in identifying the need for virtual reality therapy in sleep management and allowed them to be an active

participant in virtual reality therapy. By asking for and receiving help, the schizophrenic clients felt more at ease expressing their need for sleep management knowing that the nurse investigator will take care of those needs. With the completion of orientation, the relationship entered the next phase.

### **Identification**

The schizophrenic clients in partnership with the nurse investigator were able to identify the problems of insomnia that require working on within the relationship. The schizophrenic clients responded selectively to a nurse investigator who offered the improvement of sleep pattern by providing virtual reality therapy needed by the schizophrenic clients. Both the nurse investigator and the schizophrenic clients clarified each other's perceptions and expectations, which affected the ability of both to identify problems and offered the necessary solutions. When clarity of perceptions and expectations was achieved, the schizophrenic clients learned to make use of the nurse Investigator-Patient relationship. Once identification has occurred, the relationship enters the next phase.

### **Exploitation**

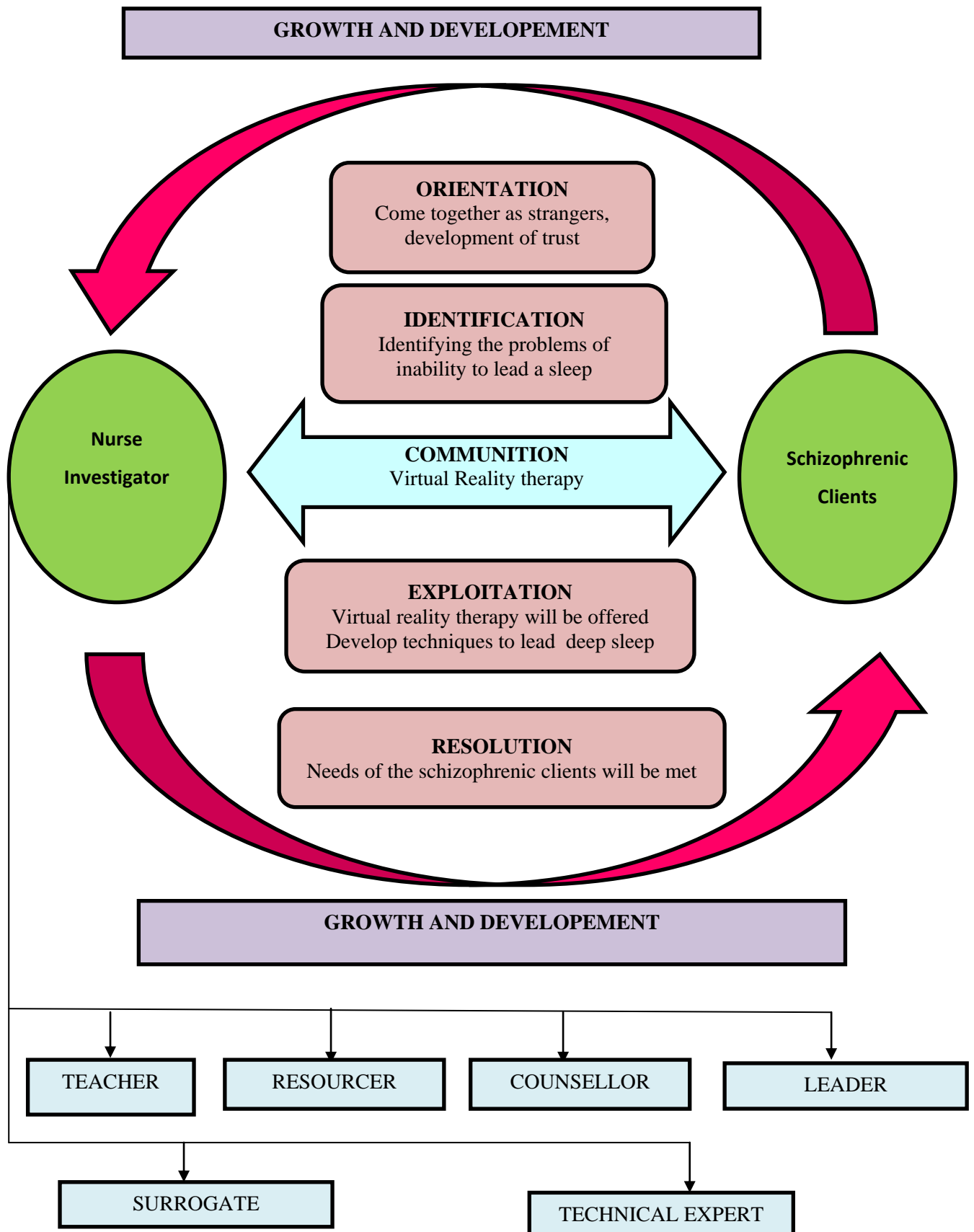
The schizophrenic clients took full advantage of the virtual reality therapy. The degree to which reduction in the level of insomnia was achieved by providing virtual reality therapy was used on the basis of the needs and the interest of the schizophrenic clients. From this sense of self-determination, schizophrenic clients developed an inner strength that allowed them to face new challenges. As the relationship passed through



all of the mentioned phases and the needs of the schizophrenic clients were met, the relationship passed on to closure or the phase of resolution.

### **Resolution**

It occurs when the needs of sleep pattern see improvement through virtual reality therapy are met. It implied the gradual freedom from identification with the nurse investigator and the generation and strengthening of ability to stand more or less alone.



**Fig.1 Conceptual Framework based on Peplau's Interpersonal Model (1952)**

### **Projected Outcome**

This study is useful for improving the sleep pattern level by providing virtual reality among schizophrenic clients. In turn, it helps them to reduce the level of insomnia and express their views in a clear, affirmative way. It helps in building an effective improvement of sleep which indirectly influences the prognosis and reduce the relapse rate. There are several other benefits of virtual reality such as it helps in cognition, body mind co-ordination, to develop empathy, it relaxes the mind and to build healthy relationship.

### **Summary**

This chapter has dealt with the background, need for the study, and statement of the problem, objectives, operational definitions, assumptions, null hypotheses, delimitations and conceptual framework and projected outcome of the study.

## **Organization of the Report**

Further aspects of the study are presented in the following five chapters.

**In Chapter – II** : Review of literature.

**In Chapter – III** : Research methodology-which includes research approach, research design, setting, population, sample and sampling techniques, tool description, content validity and reliability of tools, pilot study, data collection procedure and plan for data analysis.

**In Chapter – IV** : Analysis and interpretation of data.

**In Chapter – V** : Discussion.

**In Chapter – VI** : Summary, conclusion, implications and recommendations.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

A literature review involves the systematic identification, location, scrutiny and summary of written materials that contain information on the research problems (Polit, 2010).

The task of reviewing literature involves the identification, selection, critical analysis and reporting of existing information on the topic of the interest. This chapter will deal with a review of published studies, unpublished research studies and from related material for the present study. The review will help the researcher in building the foundation of the study.

- **Prevalence of schizophrenia.**
- **Studies on insomnia among schizophrenic clients.**
- **Literature on virtual reality therapy.**
- **Literature related to virtual reality therapy upon insomnia among schizophrenic clients.**

#### **Prevalence of schizophrenia**

A Global study was conducted by Saha et al,(2000). which included 132 core studies, 21 studies reported point prevalence, 34 studies reported period prevalence, and 24reported lifetime prevalence. The median prevalence of schizophrenia was 4.6/1,000 for point prevalence,3.3/1,000 for period prevalence, 4.0 for life time prevalence, and 7.2 for life time morbid risk. There were no significant differences between males and females, nor between urban, rural, and

mixed sites, although migrants and homeless people had higher rates of schizophrenia and, not surprisingly, developing countries had lower prevalence rates (the lower prevalence of schizophrenia in developing countries has been previously documented). Other studies show migrants having higher than expected rates of schizophrenia, definite variations in the definitions of migrants in these studies which have suffered from a series of other methodological problems.

A study was conducted by Bhugra, (2004). The study findings indicate for clinicians, clearly that lifetime prevalence is 4.0/1,000 and not 1%, as reported in the Diagnostic and statistical manual of mental disorder. fourth edition, and other text books. The study also challenges the widely held view that schizophrenia is much more common in women than in men. Bhugra's finding that schizophrenia was just as common in women has clear implications for developing services, since it means that not only must we develop and provide culturally appropriate services but also services that are gender sensitive (as the number of cases in women are higher than expected, gender becomes a more important factor).

According to WHO, Schizophrenia creates enormous burden for individuals who suffer from them, for their careers, for mental health services, and for society at large. People with schizophrenia always endured very poor social outcomes, including 80% unemployment rates. The risk of committing suicide is 5%, going up to 13% showing moderate to severe suicidal behavior.

### **Studies on insomnia among schizophrenic clients**

Many patients with schizophrenia reported chronically disturbed sleep pattern. Independent of the phase of illness, sleep disturbance documented by polysomnography includes difficulties in falling asleep, awakening too early and being unable to go back to sleep, a preference for being awake during the evening, reduced deep or slow wave sleep (the most restorative stage of sleep), and short REM latencies. (karuo,1996)

According to American Sleep Disorders association, many schizophrenic clients annually reported that they regularly have trouble sleeping at least a few nights a week. As a result, many are still so tired when they get up in the morning that they fall asleep while commuting to work or doze off on the job. American Sleep Disorders Association conducted a study and found 17% Schizophrenic clients sometimes falling asleep at their workplace. Further, 31% of clients in the 18 – 34 age admitted they had at one time or another fallen asleep at work (Bhugra, 2004).

### **Literature on virtual reality therapy**

In the science-fiction thriller The Matrix, the heroes are "plugged in" to a virtual world. While their bodies rested in reclining chairs, their minds fought martial-arts battles, dodged bullets and drove motorcycles in an elaborately constructed software program. This cardinal virtue of virtual reality is to give users the sense that they are "somewhere else"--can be of great value in a medical setting. Researchers are finding that some of the best applications of the software

focus on therapy rather than entertainment. In essence, virtual reality can ease pain, both physical and psychological. (Hoffman, 2004)

Eventually, more sophisticated equipments and design features that increasingly approximate the virtual reality three-dimensional emersion environments may be added in a stepwise fashion for creating more realistic interactions of the virtual reality psychotherapeutic environment even when affordable. However, alternatives are available, and the creative investigator may build upon existing, available, and affordable technology to develop simple virtual reality systems (Malbos, 2007)

In virtual reality training endeavor, elements of the empirically supported and multifaceted Systematic Treatment Selection model were chosen as training criteria and incorporated into virtual reality training system designed by the researcher to demonstrate both its feasibility and practicality. This article outlines initial endeavor in the development of a virtual reality system for training in psychotherapy and summarizes Systematic Treatment Selection training-relevant research findings. Future directions for the applications of virtual reality technology to both training and treatment are provided (Riva, 2005).

Rose (2005), has noted that virtual reality applications for cognitive rehabilitation face challenges as in 90s. In 1962, the US Patent Office awarded a patent to Morton Heilig for what he called a sensorama Simulator (Heilig). This device could provide the illusion of an alternate reality to one to four users by presenting them with visual, olfactory, auditory and tactile stimulation.



Virtual reality can be used as an assessment or intervention instrument for the clinical treatment of psychological disorders. Studies have been conducted which focused on cognitive behavioral therapy for the rehabilitation of anxiety disorders such as fear of heights (acrophobia), fear of flying, fear of open spaces (agoraphobia) and social phobia. Other applications involve the rehabilitation of anxiety disorders such as Post Traumatic Stress Disorders (Costa, 2004)

Virtual reality applications have also been developed for clinical rehabilitation of degradation of cognitive functioning, resulting from a range of diseases including Alzheimer's, schizophrenia or conditions such as autism. A functional overlap exists in many of these applications in that they can aim to achieve similar goals such as training with activities of daily life which support more independent living, enhancing cognitive performance and improving social skills. Each of these mini games requires the player to complete simple cognitive tasks, such as reading aloud and performing arithmetic calculations (Parsons, 2002).

Rahman (2011) has conducted a study on the effectiveness of Virtual Reality for Motor Rehabilitation of Neurological Disorder. He has discussed the rationale, criteria of application, limits of the available procedures and the effects of VR in the rehabilitation of patients with stroke and those with cerebral palsy (CP). Seventeen published articles from 1/1/2002 to 1/05/2010 have been reviewed. The studies completed to date support the efficacy of application of VR in the treatment of patients after stroke and CP patients. The duration of the rehabilitation effects after discontinuing VR training is crucial.

Miyahira (2012) has conducted a study for assessing the effectiveness of Virtual reality exposure therapy for PTSD (Post traumatic Stress disorders) in returning war fighters. The current study was a randomized controlled clinical trial designed to assess the effectiveness of a novel intervention for treating combat-related PTSD in returning Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) war fighters. A cognitive behavior treatment approach augmented with virtual reality exposure therapy (VRE) was developed, and administered for 10 treatment sessions over 5 weeks. Comparisons with a control group receiving minimal attention (MA) for 5 weeks revealed significant reduction in the VRE group in the avoidance/numbing symptoms on the Clinician Administered PTSD Scale (CAPS). The VRE group also had significant reductions in guilt at post-treatment compared to the control group.

Malbos (2013) has conducted a study on virtual reality in the treatment of mental disorders. The study depicts the utility of virtual reality therapy for assessment and therapy through various clinical studies carried out on subjects exhibiting diverse mental disorders. Despite clinical experiments set on a larger scale, extended follow-up and studies about factors influencing presence are needed, while virtual reality exposure represents an efficacious, confidential, affordable, flexible, interactive therapeutic method whose application will progressively get widened in the field of mental health. Virtual reality and interactive video gaming are innovative therapy approaches in the field of stroke rehabilitation. The impact on secondary outcomes including activities of daily living was also assessed.

A study was done to investigate the effectiveness of the virtual walking training program using a real-world video recording on walking balance and spatiotemporal gait parameters in patients with chronic stroke. Fourteen patients with chronic stroke were randomly assigned to either the experimental group ( $n = 7$ ) or the control group ( $n = 7$ ). The subjects in both groups underwent a standard rehabilitation program; In addition, the experimental group participated in the virtual walking training program using a real-world video recording for 30 minutes a day for 6 wks. Walking balance was measured using the Berg Balance Scale (BBS) and the Timed Up and Go test. Gait performance was measured using an electrical walkway system. In walking balance, greater improvement on the Berg Balance Scale and the Timed Up and Go test was observed in the experimental group compared with the control group at  $P < 0.05$ . This study demonstrated the positive effects of the virtual walking training program using a real-world video recording on gait performance (Cho, 2013).

Daniela (2012) has conducted a study to find out the relationship between interactive media and stress. It has gained wide interest in the mental health area. This study found that interactive experiences help people manage their stress. By combining different techniques, which may produce more significant outcomes than single-strategy programs, a stress management protocol was developed for increasing self awareness, to control and relax oneself, induce positive emotions, and reduce negative emotions. Stress management protocol was tested in a controlled study comparing three interactive experiences (virtual reality [VR], video and audio). Results showed efficacy of all the three interactive experiences in inducing positive emotions and integrating different approaches to manage

stress. In particular , VR showed better improvements related to the psychophysiological changes.

A randomized and quasi-randomized controlled trials was conducted by Laver in 2012. The trial compared virtual reality with an alternative or no intervention was included in the review. The Cochrane Stroke Group Trials Register, the Cochrane Central Register of Controlled Trials, electronic databases, trial registers, reference lists, Dissertation Abstracts, conference proceedings, contacted key researchers and virtual reality manufacturers were investigated. Nineteen studies with a total of 565 participants were included in the review. Virtual reality was found to be significantly more effective than conventional therapy in improving upper limb function (standardized mean difference of 0.53 and 95% confidence intervals (0.25 to 0.81)) based on seven studies, and activities of daily routine based on three studies. No statistically significant effects were found for grip strength (based on two studies) or gait speed (based on three studies).The findings shown that Virtual reality therapy appears to be a promising approach.

Powers (2013) has conducted a study to assess the effectiveness of virtual reality technology upon patients with social anxiety. The operation is limited to pre-programmed avatars that cannot be controlled to interact and converse with the patient in real time. The current technology allows the operator to directly control the avatar (including speaking) during VR conversations. Using an incomplete repeated measures (VR vs. in vivo conversation) design and random starting order with rotation counterbalancing, participants (N = 26) provided

ratings of fear and presence during both VR and in vivo conversations. Results showed that VR conversation successfully elevating fear ratings relative to baseline 30 ( $d = 2.29$ ). Participants also rated their fear higher during VR conversation than during in vivo conversation ( $d = 0.85$ ). However, in vivo conversation, it was rated as more realistic than VR conversation ( $d = 0.74$ ). No participant dropped out and all of them completed both VR and in vivo conversations. Overall, the data suggest that the novel technology allowing real time interaction/conversation in VR may prove useful for the treatment of social anxiety in future studies.

Rothbaum (2007) has conducted a study on virtual reality exposure therapy and standard (in vivo) exposure therapy in the treatment of fear of flying. This controlled clinical trial tested virtual reality exposure therapy for the fear of flying, a relatively new and innovative way to do exposure therapy, and compared it to standard (in vivo) exposure therapy and a wait list control with a 6- and 12-month follow-up. Twenty-three wait list participants completed randomly assigned treatment following the waiting period. The Treatment consisted of 4 sessions of anxiety management training followed either by exposure to a virtual airplane or an actual airplane at the airport conducted over 6 weeks. Results indicate virtual exposure therapy as superior to wait list on all measures, including willingness to fly on the post treatment flight (76% for virtual exposure therapy and standard exposure therapy; 20% for WL).

Alsina (2007) conducted a study on the validity of virtual reality as a method of exposure in the treatment of test anxiety. Twenty-one students agreed

to take part, 11 with high test anxiety and 10 with low test anxiety. The virtual environments were prepared in chronological order: the student's home, then the metro, and finally the corridor and lecture hall where the examination was held. The results showed that the high-test-anxiety group presented higher levels of anxiety and depression than the low-test-anxiety group during exposure to the virtual environments. This study shows the ability of virtual reality to provoke emotional responses in students with high test anxiety.

Jaye (2006) has conducted a study on the efficacy of virtual reality exposure therapy to treat driving phobia. A comprehensive search of literature has identified 13 studies that were included in the final analyses. Consistent with the prediction the primary random effects, analysis showed a large mean effect size for VRET compared to control conditions, Cohen's  $d = 1.1$ . This finding was consistent across secondary outcome categories as well. Also, as expected in vivo, treatment was not significantly more effective than VRET.

Anderson (2005) has conducted a study on cognitive behavioral therapy for public speaking anxiety using virtual reality for exposure. This study used an open clinical trial to test a cognitive-behavioral treatment for public-speaking anxiety that utilized virtual reality as a tool for exposure therapy. Treatment was completed by participants meeting the Diagnostic and Statistical Manual of Mental Disorders DSM-IV criteria for social phobia, or panic disorder with agoraphobia in which public speaking was the predominantly feared stimulus. The Treatment consisted of eight individual therapy sessions, including four sessions of anxiety management training and four sessions of exposure therapy using a

virtual audience, according to a standardized treatment manual. Participants completed standardized self-report questionnaires assessing public-speaking anxiety at pre-treatment, post-treatment, and a 3-month follow-up. Results showed 32 decreases on all self-report measures of public-speaking anxiety from pre- to post treatment, which were maintained at follow-up.

Schneider (2004) has conducted a cross over study to explore the use of virtual reality as a distraction intervention for relieving symptom distress in women receiving chemotherapy for breast cancer. The study was conducted in the outpatient clinic of Midwestern comprehensive cancer center. This study was conducted in 20 women 18-55 years of age. Using a crossover design, 20 subjects served as their own controls. One pretest and two post-test measures were employed for two matched chemotherapy treatments, and randomly assigned to receive the virtual reality distraction intervention during a chemotherapy treatment and received no distraction intervention (control condition) during an alternate chemotherapy treatment. Finding show significant decreases in symptom distress and fatigue occurring immediately following chemotherapy treatments when women used the virtual reality intervention.

Schneider (2003) has conducted a study on the effects of a virtual reality distraction intervention on chemotherapy-related symptom distress levels in 16 women aged 50 and above. A cross-over design was used with a head mounted display (Sony PC Glasstron PLM - S700) encompassing images and block competing stimuli during chemotherapy infusions. The Symptom Distress Scale (SDS), Revised Piper Fatigue Scale (PFS), and the State Anxiety Inventory (SAI)

were used for measuring symptom distress. Participants were randomly assigned to receive the VR distraction intervention during one chemotherapy treatment and received no distraction intervention (control condition) during an alternate chemotherapy treatment. Analysis using paired t-tests demonstrated a significant decrease in the SAI ( $p = 0.10$ ) scores immediately following chemotherapy treatments when participants used VR. Evaluation of the intervention indicated feeling of women that the head mounted device was easy to use, they experienced no cyber sickness, and 100% would use VR again.

### **Literature related to virtual reality therapy upon insomnia among schizophrenic clients**

Virtual reality therapy has thus become a mainstream psychiatric treatment for sleep disorders and is finding increasing use in the treatment of other cognitive disorders associated with various medical conditions such as addiction, depression and anxiety.

A study was conducted by Friedman, 2005. The findings also support applications of virtual reality-based therapy for insomnia, acrophobia, gloss phobia, and substance abuse. Virtual reality therapy has proved successful in normalization of sleep disorder over in 70% of the patients, it has now become a standard accepted treatment by the Anxiety and Depression Association of America. The use of "Virtual reality therapy" interventions empowers people.

The simulation technology of virtual reality lends itself to mastery oriented treatment rather than coping with threats, phobia's manage progressively more threatening aspects in a computer generated environment. The range of



applications can be extended by enhancing the reality and interactivity so that actions elicit reactions from the environments in which individuals immerse themselves".

Virtual reality therapy aims at modifying negative thoughts, beliefs, emotions, sleep pattern and behavior using a number of techniques. It is assumed that when negative thoughts are replaced by virtual reality therapy, schizophrenic patients become more realistic and reasonable in his / her perceptions virtual reality therapy also aids in learning self - motivation may also generate changes, such as increased physical activity, mind deviation, relaxation of mind, increased control over life and a renewed outlook on pain. These physiological and mental changes will holistically improve health and reduce insomnia. However, the Investigator could not find much study on virtual reality therapy upon insomnia(Bongar, 2000).

A study was conducted in two phases, survey and quasi experimental approaches which were used in phase I and phase II respectively. The sample size of the study was 130 for phase I and 60 for phase II, (30 in the control group and 30 in the experimental group) respectively. Purposive sampling technique was used for selecting the samples. Quasi experimental research design was adopted. Most of them had moderate insomnia (70%, 76.67%) in the control and the experimental groups of elderly population before virtual reality therapy. However, in the experimental group, after virtual reality therapy, none of them had clinically significant insomnia (100%) whereas in the control group, after virtual reality

therapy, nearly half of the elderly population had clinical insomnia (moderate severity - 60%) (Jeyanthi, 2014).

Virtual reality therapy helps schizophrenic clients to have positive perception. It can improve their mental health by helping the management of negative emotions such as fear, anger, worry and promotes courage, cheerfulness and sleep. When the insomnia will significantly get reduced, it also improves the psychological wellbeing and quality of life. Thus, regular practice of virtual reality therapy will be quite effective in not only overcoming insomnia among the schizophrenic clients but also helping them in promoting mental health. Virtual reality therapy is commonly used for describing various relaxation techniques that help the practitioner to control life force. Virtual reality therapy has been reported to be beneficial in treating a range of insomnia related disorders (Beutler, 2000).

Thus, the conclusion is that virtual reality therapy helps in reduction of insomnia level in the schizophrenic clients. This might prove to be a useful adjunct to medications and at times may even act as the only form of treatment. The findings would have a significant impact in our socio cultural context as people in rural areas are mostly poor and lack necessary medical care and our indigenous method of virtual reality therapy will be effective in the treatment of various mental and physical distresses. However, the Investigator could not find many studies on virtual reality therapy upon insomnia.

## **Summary**

This chapter has dealt with the review of literature related to the problem stated. It helped the researcher to understand the impact of the problem under study. Literature also enabled the investigator to design the study, develop the tool, plan the data collection procedure and to analyze the data. All the sources of review of literature, cited in these chapter are primary sources

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

The methodology of the research study is defined as the way the information is gathered for answering the research question or to analyze the research problem. The present study was conducted for assessing the effectiveness of virtual reality therapy upon insomnia among schizophrenic clients, at selected schizophrenic home in Chennai. This chapter deals with different steps undertaken by the investigator of this study. It involves research approach, the setting, and population sample, sampling technique, selection of tool, content validity, reliability, pilot study, data collection procedure and plan for data analysis.

#### **Research Approach**

Research approach is the most significant part of any research. The appropriate choice of the research approach depends on the purpose of the research study which is undertaken. An experimental approach was used in this study for accomplishing the objective of the study, as the researcher wanted to assess the effectiveness of virtual reality therapy on insomnia.

## **Research Design**

The research design is the planned structure and strategy of investigation of answering research question. It is the overall plan or blue print to the researches to select carryout the study (Polit, 2004).

The research design used in this study was pre - experimental research design.

A one group pre-test, post-test pre experimental research design, was adopted for conducting the study. In this study, the investigator administered a pre-test for the selected schizophrenic clients and virtual reality therapy was administered to the same group of clients. The post test was conducted later. The effect of virtual reality therapy on insomnia was assessed at the end.

The research design is represented diagrammatically as follows

$O_1 \text{ X } O_2$

$O_1$  – Pretest of insomnia among the schizophrenic clients.

X – Virtual reality therapy

$O_2$  – Post test of insomnia among the schizophrenic clients.

## **Interventional protocol**

### **Virtual Reality Therapy**

- In this study, the participants became a part of virtual world or in a therapeutic environment involved in performing a series of actions displayed on the screen and the person experienced the realistic situation. Thereby this intervention was performed by appropriate movements made by the individual depending upon the task, designed in the reality.
- It was administered for 5-7 minutes every day in the Morning for 6 consecutive days for each client.

## **Variables**

An abstract concept when defined in terms that can measure is called a variable. Variables are characteristics that vary among the subjects being studied.

### **Independent variable**

It is variable hypothesized to outcome variable of interest. In this study, the independent variable was virtual reality therapy.

### **Dependent variable**

It is the variable hypothesized to be dependent on or to be caused by another variable. In this study dependent variable was insomnia.

## **Research Setting**

Settings are the most specific places where data collection takes place. The study was conducted in Dr. Peter Fernandez's Home for Schizophrenia, Mugalivakkam, Chennai. It is located about 5 Kms from Porur bus stand. It is a 80 bedded home, with 30 beds for females and 50 for males. They have a daily schedule of activities starting from Morning Prayer, breakfast, therapy session followed by lunch and a period of rest and watching television, dinner, and bedtime. The Home is managed by a psychiatrist, 2 social workers, 3 nurses and some administrative staff.

## **Population**

Population is the entire aggregation of cases which meet the designated set of criteria (polit and Beck 2012). The target population is the group of people that the researcher aims to study and to whom the study findings were generalized.

In this study, the target population comprises of all the schizophrenic clients who satisfy the inclusion criteria. The accessible population is the list of population that the researcher finds in the study area. The accessible population who satisfy the inclusion criteria at Doctor peter Fernandez's home for schizophrenia, Mugalivakkam, Chennai.

### **Sample**

The sample consists of the subset of units that comprise the population (Polit & Beck, 2012). Here it comprised 30 schizophrenic clients who met the inclusion criteria at Doctor Peter Fernandez's home for schizophrenia, Mugalivakkam, Chennai.

### **Sample size**

The sample size for present study was 30. The decision on the sample size was based on the feasibility and the availability of the sample.

### **Sampling Technique**

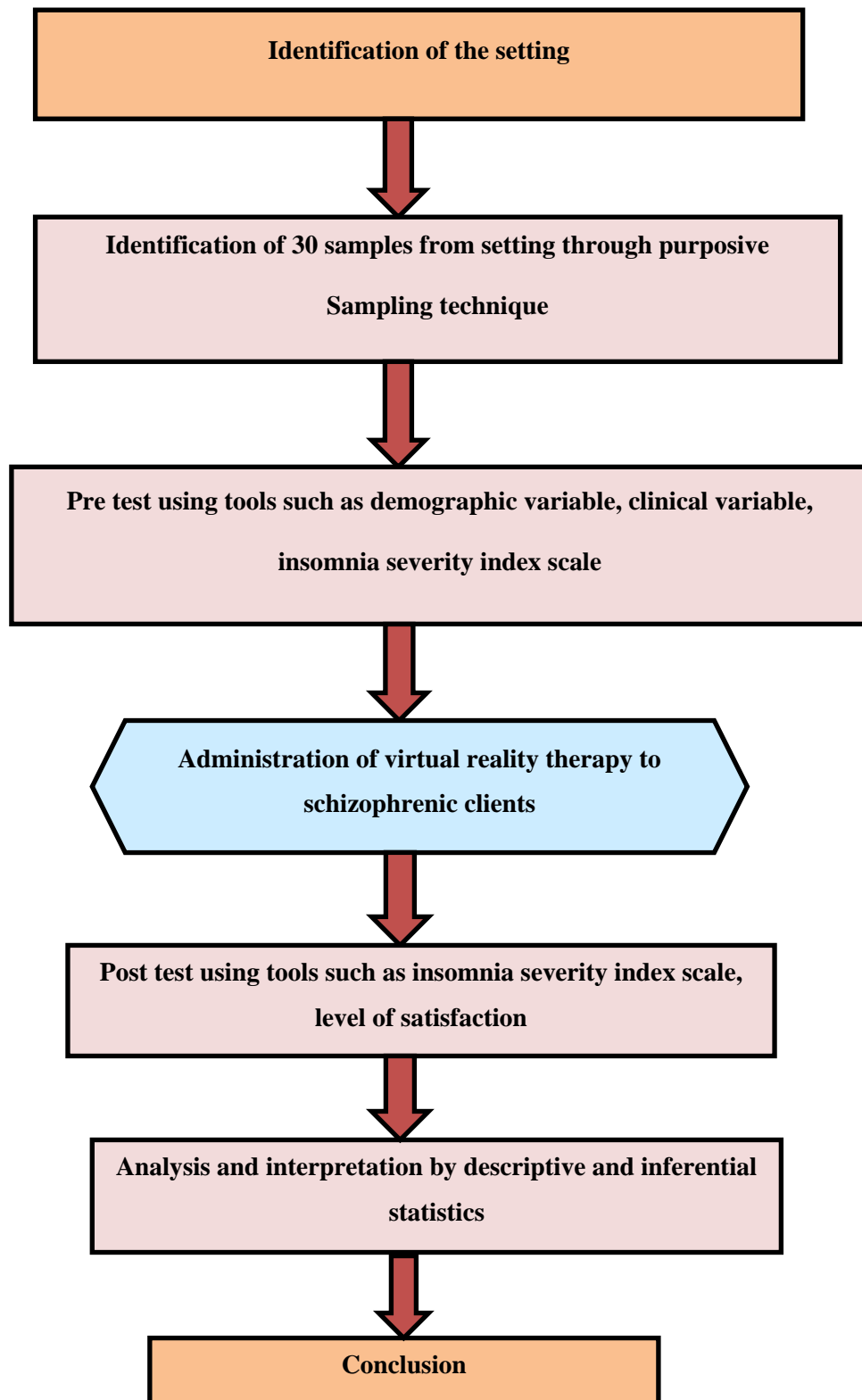
Sampling is the process of selecting a portion of population to represent the entire population (Polit& Beck 2012). In this study, the researcher used selection of participants based on personal judgment. Thus researcher used purposive sampling technique based on the inclusion criteria of the study.



## **Sampling Criteria**

### **Inclusion Criteria**

- The Study included the schizophrenic clients who were admitted in the Home for schizophrenia.
- Clients who were taking treatment in the homes for schizophrenia for more than six months.
- Clients who were able to speak & read English or Tamil.



**Fig 2.Schematic representation of research design**

### **Exclusion criteria**

- Clients with acute or severe psychotic symptoms
- Clients who were not willing to participate in the study
- Clients with visual and hearing problems

### **Selection and Development of Study Instruments**

The study aims at evaluating the effectiveness of virtual reality therapy upon the level of insomnia among schizophrenic clients. The data collection instruments were developed and chosen through an extensive review of literature in consultation with experts and with the opinion of the faculty members. The instruments used in the study were:

- Demographic variable Proforma.
- Clinical variable proforma.
- Insomnia severity index scale.
- Rating scale on the level of satisfaction after virtual reality therapy.

### **Demographic variable proforma of schizophrenic clients**

The demographic variables proforma was used for collecting the base line details such as age, occupational status, type of family, family income, marital status, number of children and duration of stay. The investigator collected the data by interviewing the clients.

### **Clinical variable proforma of schizophrenic clients**

This was used for assessing the clinical variables such as diagnosis, duration of illness, history of previous hospitalization, source of help availed, family history of mental illness, onset of mental illness and treatment of mental illness. The investigator collected the data by interviewing the clients and referring to the case sheet of the clients.

### **Insomnia severity index scale**

This is a standardized tool for assessing the insomnia level developed by Charles.M.morin. It consists of 7 items on patterns of sleeping. It is 5point rating scale, with 5 points ranging from none, mild, moderate, severe and very severe and scores ranged from 0 to 4 respectively. Individual item scores were added to obtain the total insomnia score. Total obtainable score ranges from 0 to 28. Higher scores indicate severe insomnia.

### **Score interpretation**

0 – 7 = No clinically significant insomnia

8 – 14 = sub threshold insomnia

15 – 21 = clinical insomnia (moderate severity)

22 – 28 = clinical insomnia (severe)

### **Rating scale on the level of satisfaction of virtual reality therapy in the experimental group of schizophrenic clients**

This was developed by the investigator for assessing the satisfaction of virtual reality therapy among schizophrenic clients. This scale consists of 12 items on the satisfaction of the study participants regarding the various aspects of virtual reality therapy, rated on a four-point scale with the score – Highly Satisfied – 4, Satisfied – 3, Dissatisfied – 2, Highly Dissatisfied – 1. The scale was used for assessing various aspects of virtual reality therapy such as explanation given about the virtual reality therapy, the researcher's approach to the clients, time, duration, understand ability and usefulness, involvement of the participants and arrangements made during the program me. Thus the total obtainable score is 12-48. The obtained score is converted into percentage and is interpreted as follows:

<b>Percentage</b>	<b>Interpretation</b>
76 – 100	Highly Satisfied
51 – 75	Satisfied
25 – 50	Dissatisfied
Below 25	Highly Dissatisfied

### **Validity**

The content validity refers to the degree to which the item on an instrument adequately represents the universe of the content (Polit & Beck, 2012).

Insomnia severity index scales are standardized instrument. The other Proforma and scales were certified and validated by six experts.

### **Reliability**

Reliability refers to the accuracy and consistency of the measuring tool (Polit & Beck 2012). Insomnia severity index scale is a standardized tool developed by Dr. Charles.M.morin. Reliability of the tool was Cronbach's alpha  $r = 0.78$ , determined by using split half technique, which indicates that the tool is highly reliable.

### **Pilot study**

Pilot study was a miniature of some part of actual study, in which the instrument was administrated to the subjects drawn from the population. It was a small scale version done in preparation for the major study, (Polit & Beck, 2012). The purpose was to find out the feasibility and practicability of the study design. A pilot study was conducted on six schizophrenic clients and the conduct of the study was found feasible.

The pilot study was conducted among 6 schizophrenic clients in Dr. Peter Fernandez home, Mugalivakam. Formal permission was obtained from the authorities for the pilot study. Five subjects were chosen by purposive sampling technique. The therapy was administered for all the selected clients individually one by one for a duration of 5-7 minutes for each client. The clients were assisted by the researcher during the sessions. The level of insomnia was assessed by using

the predetermined tools. The level of satisfaction on virtual reality therapy was assessed later using the rating scale for the group.

### **Protection of human rights**

- The study was conducted after obtaining the approval of ethical committee, Apollo Hospitals Chennai.
- The study was conducted after obtaining permission from the Principal, Apollo College of Nursing, H.O.D psychiatric department, the concerned authority of the Doctor Peter Fernandez home for schizophrenia, Mugalivakam, Chennai.
- The Written consent was obtained from the clients and confidentiality was maintained throughout the study.

### **Data collection procedure**

Data collection is the gathering of information needed for the researcher to address the research problem. Data collection was done by the researcher for a period of 4 weeks. The researcher identified the clients who met the inclusion criteria and selected 30 clients in the setting for the study through purposive sampling technique. After initial introduction, the researcher obtained consent from the clients to participate in the study. An assurance was given regarding confidentiality before the data collection procedure. The data was collected by using predetermined and pretested tools such as demographic variable proforma,

clinical variable proforma, clinical insomnia scale by interview method using structured questionnaire.

Virtual reality therapy was administered after the pretest. The therapy was administered for all the clients individually one by one for a duration of 5 – 7 minutes for each client for 1 week. The clients were assisted by the researcher during the sessions. Then the level of satisfaction on regarding virtual reality therapy was assessed by using the satisfaction rating scale. Posttest was conducted after one week of the intervention.

### **Plan for data analysis**

Data analysis is the systematic organization and synthesis of research data and testing of null hypothesis by using the obtained data (Polit&Beck 2012). Data was analyzed by using appropriate descriptive and inferential statistics.

Descriptive statistics such as mean, median, frequency, standard deviation and the percentage were used for describing the demographic variables, clinic variables and the level of insomnia in the group of schizophrenic clients. Inferential statistics like paired 't' test was used to assess the effectiveness of virtual reality therapy upon insomnia by comparing the pre and posttest mean score of insomnia. Chi square test was used to assess the association between insomnia and the selected variables of schizophrenic clients



## **Summary**

This chapter dealt with research approach, research design, setting, population and sample, sampling technique, sampling criteria, selection and development of study instruments, reliability, pilot study, data collection procedure, plan for data analysis and Budget.

## **CHAPTER IV**

### **ANALYSIS AND INTERPRETATION**

Analysis is defined as the method of organizing data in such a way that the research question can be answered. Interpretation is the process of the results and of examining the simplification of findings with a broader context (Polit,2008).

This chapter deals with the analysis and interpretation including both descriptive and inferential statistics. Statistics is the field of study concerned with the techniques and method of collection of data, classification and summarizing, interpretation, drawing inferences, testing of hypothesis, making recommendations (Mahajan,2010).

The data analysis was done as per the objective and hypothesis of the study. The data were entered into the master coding sheet and the analysis of the study was made. Descriptive and inferential statistics was used by the investigator for analysis. Tabulation and interpretation of the data was done using descriptive and inferential statistics.

#### **Organization of the Findings**

The findings of the study were organized and presented under the following headings.

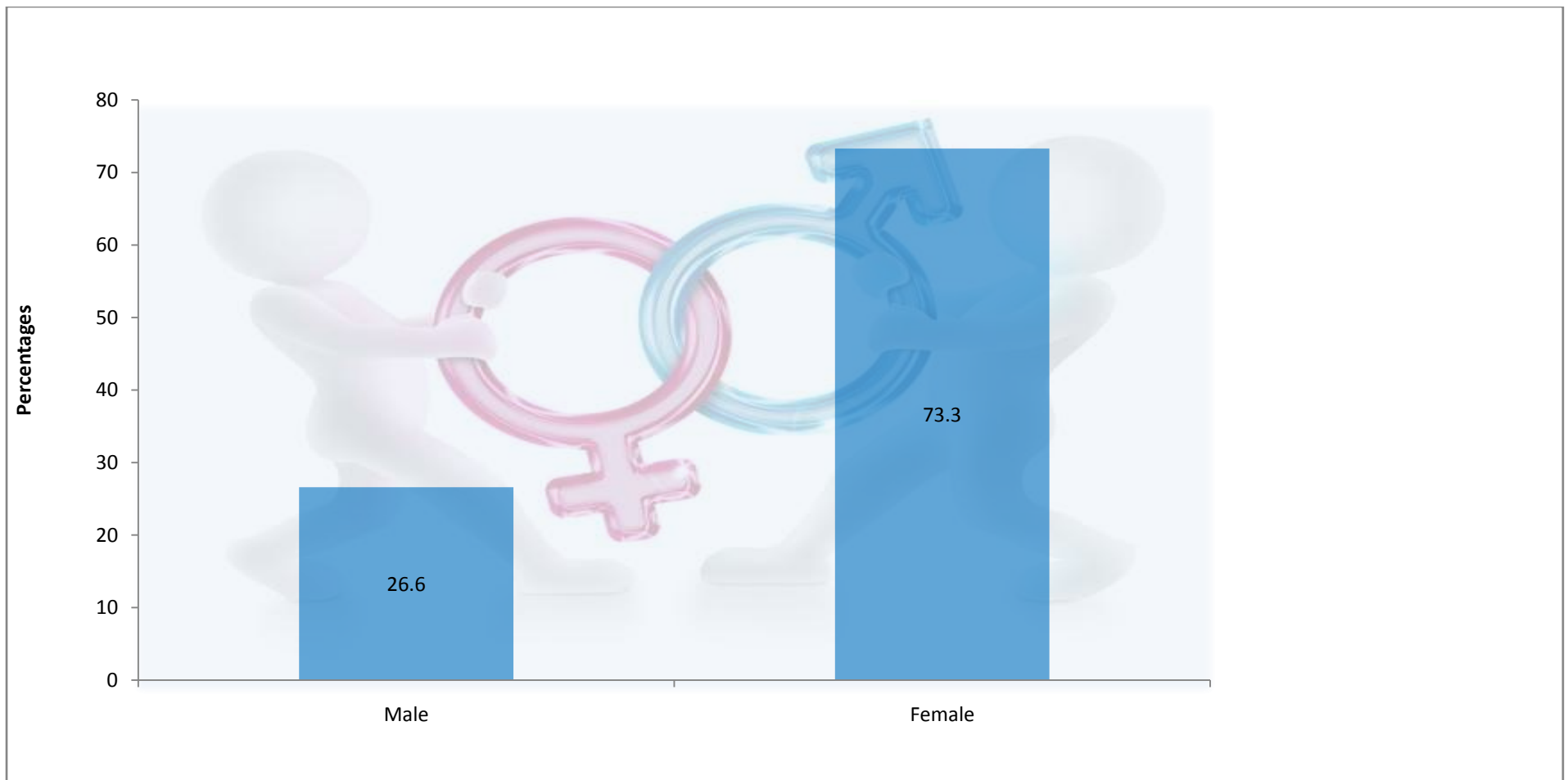
- Frequency and Percentage Distribution of Demographic Variables of Schizophrenic clients. (Table:1)

- Frequency and Percentage Distribution of Clinical Variables in schizophrenic Clients (Table: 2).
- Frequency and Percentage Distribution of Level of insomnia in schizophrenic clients Before and After Virtual Reality Therapy (Table: 3).
- Comparison of Mean and Standard Deviation of insomnia in schizophrenic clients before and After Virtual Reality Therapy (Table: 4).
- Using Wilcoxon signed ranks test of insomnia among schizophrenic clients before and after virtual reality therapy (Table: 5).
- Frequency and Percentage of level satisfaction on administration of Virtual Reality Therapy in schizophrenic clients (Table: 6).
- Association between the selected variables and the level of insomnia in the schizophrenic clients before and after virtual reality therapy (Table: 7).

**Table: 1****Frequency and Percentage Distribution of Demographic Variables of Schizophrenic Clients.****N = 30**

Demographic variables	N	p
<b>Age (in years)</b>		
20 – 30 yrs	-	-
31 - 40 yrs	27	90
41 – 50 yrs	2	6.6
>50 yrs	1	3.3
<b>Marital status</b>		
Married	6	20
Un married	20	66.6
Separated / divorce	2	6.6
Widow /widower	2	6.6
<b>Monthly income</b>		
Up to 10,000	5	16.6
10,001 – 16,000	2	6.6
16,001 – 20,000	3	10
Above 20000	20	66.6
N0t known	-	-
<b>Religion</b>		
Hindu	27	90
Muslim	1	3.3
Christian	2	6.6

Table: 1 shows a, majority of clients were aged between 31-40years (90%), females (73.3%), un married (66.6%), Hindus (90%), with >20,000 monthly incomes (66.6%).

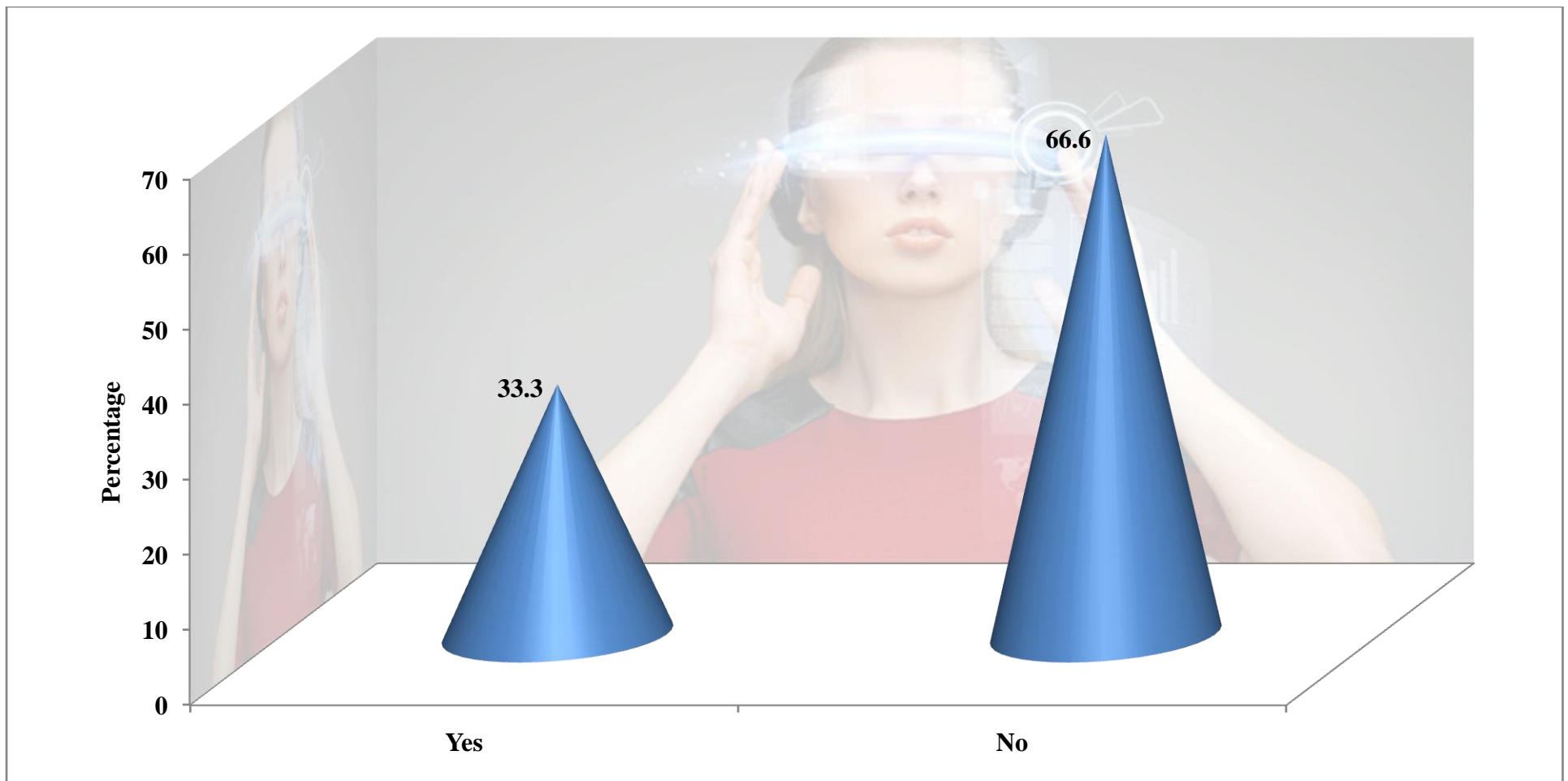


**Fig.3. Percentage distribution of gender of Schizophrenic Clients**

**Table : 2****Frequency and Percentage Distribution of Clinical Variables in schizophrenic clients****N = 30**

Clinical variable	n	p
<b>Any medical illness</b>		
Diabetes mellitus	1	3.3
Hyper tension	1	3.3
Arthritis	1	3.3
Respiratory problem	1	3.3
Others (specify)	1	3.3
nil	25	83.3
<b>Duration of medical illness</b>		
< 1 year	2	6.6
1- 5 year	2	6.6
6- 10 year	1	3.3
10 year	-	-
NIL	25	83.3
<b>Onset of illness</b>		
Below 20 yrs	11	36.6
20-30 yrs	15	50
Above 30 yrs	4	13.3
<b>Duration of hospitalization</b>		
0-1 yrs	5	16.6
2-3 yrs	13	43.3
4-5 yrs	6	20
>5 yrs	6	20

Table : 2, helps the inference that most of the schizophrenic clients did not have any medical illness (83.3%), half of their onset of illness is between 20-30 yrs of age (50%), duration of hospitalization is 2-3 yrs (43.3%) and did not practice any relaxation therapy (66.6%).



**Fig. 4 Percentage distribution of Schizophrenic clients received relaxation training**

**Table: 3**

**Frequency and Percentage Distribution of Level of insomnia in schizophrenic clients Before and After Virtual Reality Therapy.**

N = 30				
Level of insomnia	Before therapy		After therapy	
	n	p	n	p
No clinical significant insomnia	-	-	30	100
Sub threshold insomnia	-	-	-	-
Clinical insomnia (moderate)	30	100	-	-
Clinical insomnia (Severe )	-	-	-	-

Table 3 indicates that moderate clinical insomnia among all clients before virtual Reality therapy, whereas after virtual reality therapy, none of them (0%) had significant insomnia. These results can be attributed to the Effectiveness of virtual reality therapy.



**Table: 4**

**Comparison of Mean and Standard Deviation of insomnia in schizophrenic clients before and After Virtual Reality Therapy.**

**N = 30**

Group	Mean	SD	t - value
Pre test (Before therapy)	18.3	4.18	4.45***
Post test (After therapy)	3.03	2.68	

\*\*\*  $p < 0.001$

There was significant difference in insomnia score between pretest (M= 18.3, SD= 4.18) and posttest (M= 3.03, SD= 2.68) which was significant ( $p < 0.001$ ). insomnia score was less in posttest than pretest.

**Table: 5**

**Comparison of insomnia score between pre-test and post-test among schizophrenic clients (using Wilcoxon signed ranks test)**

**N = 30**

<b>Group</b>	<b>Median</b>	<b>Obtained Range</b>	<b>Wilcoxon test</b>	<b>p-value</b>
Pre-test	18	15-21	-4.791	<0.001
Post-test	2	0-7		

Use of Wilcoxon signed ranks test, a statistical significant difference between pretest and posttest of insomnia score ( $p < 0.001$ ) is seen.

**Table: 6**

**Frequency and Percentage of level satisfaction on administration of Virtual Reality Therapy in schizophrenic clients.**

**N = 30**

Level of Satisfaction	Highly Satisfied		Satisfied		Dissatisfied		Highly Dissatisfied	
	n	p	n	p	n	p	n	p
Overall Satisfaction	26	86	4	13	-	-	-	-
Related to therapy	25	83	5	16	-	-	-	-
Outcome of virtual reality therapy	26	86	4	13	-	-	-	-
Related to researcher	26	86	4	13	-	-	-	-

Table: 6 helps inference that most of the schizophrenic clients were highly satisfied (86%) with all the aspects of virtual reality therapy.

**Table: 7**

**Association between the selected variables and the level of insomnia in the schizophrenic clients before and after virtual reality therapy.**

**(N=30)**

Selected variables	Before Therapy		$\chi^2$	After Therapy		$\chi^2$
	Upto Mean	Above Mean		Upto Mean	Above Mean	
<b>Age(in years)</b>						
Up to 35	10	3	0.2 # (df=1)	9	6	0.6 # (df=1)
Above 35	8	9		11	4	
<b>Gender</b>						
Male	4	4	0.06 # (df=1)	5	3	1.0 # (df=1)
Female	14	8		15	7	
<b>Educational status</b>						
Up to higher secondary	13	6	0.26 (df=1)	14	5	0.42 (df=1)
Graduate and Above	5	6		6	5	
<b>Duration of hospital stay</b>						
Up to 3 years	9	9	0.25 # (df=1)	11	7	0.69 # (df=1)
>3years	9	3		9	3	
<b>Any medical illness</b>						
Present	4	1	0.25 # (df=1)	2	3	0.75 # (df=1)
Absent	14	11		18	7	

# = yates corrected test,  $\chi^2$  = Chi Square

Table: 7 helps inference that there is no significant association between the selected variables and the level of insomnia in the schizophrenic clients. Hence the null hypothesis  $H_{02}$  was retained.

## **Summary**

This chapter has dealt with the analysis and the interpretation of data obtained by the researcher. The analysis showed improvement in the level of insomnia in the schizophrenic clients after administration of virtual reality therapy, when compared to the before administration of the therapy. This implied that virtual reality therapy has the effect on insomnia.

## **CHAPTER V**

### **DISCUSSION**

This study was carried out upon 30 schizophrenic clients, Chennai. The level of insomnia was assessed before virtual reality therapy using insomnia severity index scale in the group of schizophrenic clients. Virtual reality therapy was administered every day morning 5 –7 minutes for the period of two weeks for each schizophrenic clients. After two weeks, the level of insomnia was assessed by using insomnia severity index scale among the schizophrenic clients. Then the level of satisfaction on virtual reality therapy was assessed by using satisfaction scale developed by the investigator.

The discussion is presented under the following headings

- Demographic variables of schizophrenia
- Clinical variables of schizophrenic clients
- Level of insomnia among schizophrenic clients
- Effectiveness of virtual reality therapy on insomnia
- Level of satisfaction of virtual reality therapy
- Association between the selected variables and level of insomnia among schizophrenic clients

#### **Demographic variables of schizophrenia**

The study results show that, a majority of them were between 31-40years (90%), females (73.3%), un married (66.6%), Hindus (90%), with >20,000 monthly income (66.6%).

### **Clinical variables of schizophrenic clients**

This study indicates the absence of any medical illness in a majority of the schizophrenic clients (83.3%), most of their onset of illness is in patients between 20-30 of age (50%), duration of hospitalization was 2-3 yrs (43.3%) and did not practice any relaxation therapy (66.6%).

**The first objective of the study was to assess the level of insomnia among schizophrenic clients before and after virtual reality therapy.**

The study indicates the presence of clinical insomnia in all of them. Moderate clinical insomnia before administration of virtual Reality therapy, whereas, after virtual reality therapy, none of them (0%) had significant insomnia. These results can be attributed to the effectiveness of the virtual reality therapy. Hence the null hypothesis  $H_{01}$  was rejected.

Consistent findings reported by American sleep disorders association, show many schizophrenic clients annually report that they regularly have trouble in sleeping at least a few nights a week. As a result, many are still so tired when they get up in the morning that they fall asleep while commuting to work or doze off on the job. American Sleep Disorders Association conducted a study and found that 17% Schizophrenic clients sometimes fell asleep at their workplace. Further, 31% of clients in the 18 – 34 age admitted they had at one time or another fallen asleep at work (Bhugra, 2004).

**The second objective of the study was to assess the effectiveness of virtual reality therapy by comparing the level of insomnia among schizophrenic clients before and after virtual reality therapy.**

The corresponding null hypothesis was ‘There will be no significant difference in the level of insomnia among Schizophrenic clients before and after administration of virtual reality therapy.

The insomnia score in schizophrenic clients, before the therapy was high ( $M = 18.3$ ,  $SD = 4.18$ ) and after therapy, it found to be much less ( $M = 3.03$ ,  $SD = 2.68$ ), which is statistically proven to be significant at  $P < 0.001$ . Hence, the null hypothesis  $H_0$  was rejected. The reduction in insomnia after the therapy can be attributed to the Virtual reality therapy. Therefore, it can be used as an effective intervention as a part of clinical treatment of psychological disorder, to improve quality of sleep among patients.

These findings are consistent with a study conducted by Jayanthi (2013) to assess the effectiveness of virtual reality therapy upon insomnia among old age people. She reported that virtual reality therapy was effective in reducing insomnia among old age people. Studies by the researcher have also demonstrated the effectiveness of virtual reality therapy on various other psychological problems such as anxiety disorders, posttraumatic stress disorder. This supports the statement that virtual reality application has been developed also for clinically rehabilitation of a degradation of insomnia resulting from schizophrenia. Examining the design and engineering of computer games technology may lead to some useful suggestions about how to design the therapeutic intervention to engage and motivate the clients. Virtual reality therapy can be used for assessment



and rehabilitation and improvement in the level of sleep pattern for the clients suffering from mental illness as well as for normal population to improve their psychological wellbeing.

**The third objective of the study was to determine the level of satisfaction in schizophrenic clients regarding Virtual Reality Therapy.**

Satisfaction arises from a person, when a therapy is balanced between the choice of the study and professional responsibility. A high level of effectiveness can be obtained when the participants are satisfied with the various components of any intervention such as the method of administration, approach of the researcher, easiness, feasibility etc.

The researcher found satisfaction among a majority of the schizophrenic clients (86%) with virtual reality therapy. These findings indicated effectiveness of administration of virtual reality therapy in improving the sleep pattern level in schizophrenic clients, due to being, cost effective and harmless. Many of the schizophrenic clients reported high level of satisfaction. So the nurses were instrumental in administering virtual reality therapy to the schizophrenic clients without any restriction and helped to improve the sleep pattern in the schizophrenic clients, thereby improving even the quality of life. The study findings have thrown light on the fact that sleep impairment in schizophrenic clients could be reduced through an effective psychosocial intervention like virtual reality therapy. It is an intervention using technology for presenting the user with interactive virtual or mixed reality environment.

**The fourth objective of the study to find out the association between selected variables and level of insomnia among schizophrenic clients before and after Virtual Reality Therapy.**

Corresponding hypothesis was **H<sub>02</sub>** ‘There will be no significant association between selected variables and level of insomnia among Schizophrenic clients before and after the virtual reality therapy’.

Chi – square test was used to find out the association between selected variables and the level of insomnia. It is found that there was no significant association between the level of insomnia and the selected variables of the schizophrenic patients. Hence the null hypothesis was retained.

Lack of association in this study may be due to small sample size and homogenous nature of samples with respect to the nature of illness and treatment variables. Various studies increasing in number have found that sleep impairment profoundly limits the work functioning in persons with schizophrenia. Impaired sleep pattern predicts worse employment outcomes in clients going through rehabilitation.

A study was conducted by Friedman, 2005, it also supports application of virtual reality-based therapy for insomnia, acrophobia, gloss phobia, and substance abuse. Virtual reality therapy was proved successful in normalization of over 70% among persons suffering from sleep disorder and that has now become a standard accepted treatment by the Anxiety and Depression Association of America. Hence "Virtual reality therapy" interventions can be effectively used in treatment of psychological problems and insomnia.

## **Summary**

This chapter dealt with the objectives of the study, major findings of the demographic and clinical variable of schizophrenic clients with insomnia among schizophrenic clients before and after administration virtual reality therapy, Mean and Standard Deviation of insomnia level before and after virtual reality therapy, association between the selected demographic and clinical variable and level of insomnia of the schizophrenic clients and the level of satisfaction of the virtual reality therapy.

## **CHAPTER VI**

### **SUMMARY, CONCLUSION, IMPLICATION ANDRECOMMENDATION**

#### **Summary**

The aim of the study is to assess the effectiveness of virtual reality therapy upon insomnia among schizophrenic clients at selected home for schizophrenic clients, Chennai.

#### **Objectives of the study**

1. To assess the level of insomnia among schizophrenic clients before and after virtual reality therapy.
2. To assess the effectiveness of virtual reality therapy by comparing the level of insomnia among schizophrenic clients before and after virtual reality therapy.
3. To determine the level of satisfaction in schizophrenic clients regarding Virtual Reality Therapy.
4. To find out the association between selected variables and level of insomnia among schizophrenic clients before and after Virtual Reality Therapy.

## **Null Hypothesis**

The null hypothesis stated are:

**H01** There will be no significant difference in the level of insomnia among Schizophrenic clients before and after administration of virtual reality therapy.

**H02** There will be no significant association between selected variables and level of insomnia among Schizophrenic clients before and after the virtual reality therapy.

## **Major findings of the study**

### **Demographic variables of schizophrenia**

The study results show that, a majority of the schizophrenic patients were aged between 31-40years (90%), females (73.3%), un married (66.6%), Hindus (90%), with >20,000 monthly incomes (66.6%).

### **Clinical variables of schizophrenic clients**

This study indicates the absence of any medical illness in a majority of the schizophrenic clients (83.3%), most of their onset of illness is in between 20-30 yrs of age (50%), duration of hospitalization is 2-3 yrs (43.3%) and did not practice any relaxation therapy (66.6%).

### **Level of insomnia among schizophrenic clients**

The study indicates the presence of moderate clinical insomnia among all of them before administration of the virtual Reality therapy, whereas after virtual

reality therapy, none of them (0%) had any significant insomnia. These results can be attributed to the Effectiveness of virtual reality therapy. Hence the null hypothesis H01 was rejected.

### **Effectiveness of virtual reality therapy on insomnia**

The insomnia score in schizophrenic clients, before the therapy was high ( $M = 18.3$ ,  $SD = 4.18$ ) and after therapy, it found to be less ( $M = 3.03$ ,  $SD = 2.68$ ), which is statistically proven to be significant  $P < 0.001$ . Hence, the null hypothesis H01 was rejected. The reduction in the insomnia after the therapy can be attributed to the Virtual reality therapy. Therefore, it can be used as an effective intervention for the clinical treatment of psychological disorder.

### **Level of satisfaction of virtual reality therapy**

The researcher found satisfaction among a majority of the schizophrenic clients (86%) with virtual reality therapy.

### **Association between the selected variables and level of insomnia among schizophrenic clients**

No significant association was noticed between the level of insomnia and the selected variables of the schizophrenic patients. Hence the null hypothesis was retained.

## **Conclusion**

The finding of the study reveal insomnia as one of the common problems faced by the schizophrenic clients. It may be due to various factors such as neurotransmitter imbalance, increasing nuclear family system and inadequate time to take care of them. Virtual reality therapy is a non-pharmacological psychosocial intervention for the treatment of insomnia, which can be practiced by schizophrenic clients to improve quality of sleep.

## **Implications**

Based on the findings of the study, the researcher recommends the implications on Nursing practice, nursing education, nursing administration, Nursing research.

### **Nursing practice**

It was identified during interview from selected schizophrenic homes, Chennai that many schizophrenic clients complain of insomnia. But basically it is being neglected by the women and health professionals unless it is severe. Psychiatric nurses play a vital role in meeting the biological needs of the patients, including the need for sleep. Since a, majority of the schizophrenic patients experience insomnia, nurses can plan and practice psycho social interventions including virtual reality therapy to improve the quality of sleep among schizophrenic patients.

### **Nursing education**

There is need to incorporate the major findings in nursing curricula at all levels in order to equip students well to address insomnia and its problem with changing health care trends, nursing education must emphasize primary care approach focusing on prevention than cure. Students can be motivated to conduct mass awareness programs on insomnia and its management among mentally ill patients. So nursing students at all levels should be taught about the problems faced by the people with insomnia, and available complimentary therapy including virtual reality therapy to deal with their problems including insomnia.

### **Nursing administration**

In today's technological advance and the ever growing challenges in the care needs, the nurse administrator has the highest responsibility in providing the psychiatric nurse with substantive continuing education opportunities in the alternative therapies for insomnia. This will enable the nurses to cultivate and



update her knowledge, and manage schizophrenic clients with insomnia problem. The nurse administrator should take initiative and organize continuing education programs on management of insomnia with supportive care like virtual reality therapy for nursing personnel in the hospital and in the community setting with modern technological visual aids to gain adequate knowledge regarding non pharmacological ways of reducing insomnia severity.

The nurse administrator should take adequate steps with the growing bodies in formulating policies and protocol to emphasize on nursing care of schizophrenic clients with insomnia, and plan for man power, money, material methods and time to conduct the programs. The nurse administrator should organize and provide opportunities for the psychiatric nurses to attend training programs on psychosocial intervention including virtual reality therapy.

### **Nursing research**

As a result of growing demand, there is a heightened urgency to expand the evidence base to support their use. There is a need for extensive and intensive research in this area for generating a more specific data base and to identify the benefits of therapies and provide much needed information for the consumers and providers. It opens a big avenue for research on innovative, alternative methods for reducing the severity of insomnia. Further research needs to be conducted for helping schizophrenic clients with insomnia to come out from their health problems. The Professional and student nurses could conduct further studies on the impact of various alternative methods for treating insomnia and also for avoiding the use of sleeping pills and its side effects.

## **Recommendations**

The researcher recommends the following studies in the field of nursing research

- The study could be conducted on larger samples for better generalization.
- The study could be replicated in other settings like the community and hospitals etc.
- A time series design can be conducted with an interval of 2, 4 and 6 months to assess the long term effects of virtual reality therapy upon insomnia.
- A study can be conducted to assess the effectiveness of virtual reality therapy on quality of life among the schizophrenic clients.

## **Limitations**

- The study findings cannot be generalized due to sample size being small.
- Random sampling was not possible due to practical difficulties.
- True experimental research could not be conducted due to unavailability of the patients and practical difficulties.

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## APPENDIX I

### LETTER SEEKING PERMISSION TO CONDUCT STUDY



**Apollo College of Nursing**  
(A unit of Apollo Hospitals Educational Trust)

(Recognised by the Indian Nursing Council and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/0206/15

05.05.2015

To

Dr. Peter Fernandez  
Dr. Fernandez Home for Schizophrenia  
Sabari Nagar Extension  
Mugaliyakam,  
Chennai.

Respected Sir,

**Sub.:** To request permission for research study – Reg

**Greetings!** As part of the curriculum requirement our 2<sup>nd</sup> year M.Sc. (N) student Ms. Shilpa Jabeen.S has selected the following title for her Research Study.

**“A pre experimental study to assess the effectiveness of virtual reality therapy upon insomnia among schizophrenic clients.”**

So I kindly request your good selves to permit her to conduct study in your esteemed hospital.

Thanking you,

*Latha*  
**Dr. LATHA VENKATESAN**  
**PRINCIPAL**

*Permitted*  
**Dr. M. PETER FERNANDEZ**  
M.D., D.P.M., T.D.D., FIPS  
Professor Emeritus (Psychiatry)  
# 3, Sabari Nagar Extn.,  
Mugaliwakkam, Chennai-600 125.

Regd. Office : 21, Greaves Lane Off, Greaves Road, Chennai - 600 006. Ph. : +91-44-2829 3333, 2829 0200 Website : [www.apollohospitalseducation.com](http://www.apollohospitalseducation.com)  
Unit Office : Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095. Phone : 044 - 2653 4387 Fax : 044 - 2653 4923 / 2653 4386



Emergency Service  
Dial **1066**



## APPENDIX II

### ETHICAL COMMITTEE CLEARANCE LETTER



#### Institutional Ethics Committee - Clinical Studies

Reg. No. : ECR/37/Inst/TN/2013

7 July 2015

To,  
Ms. Shilpa Jabeen S.,  
First year, M.SC (Nursing),  
Department of Mental Health Nursing,  
Apollo College of Nursing, Chennai.

**Ref:** A pre experimental study to assess the effectiveness of virtual reality therapy upon insomnia among schizophrenic clients.

**Sub:** Approval of the above referenced project and its related documents.

Dear Ms. Shilpa,

The Institutional Ethics Committee-Clinical Studies has received the following document submitted by you related to the conduct of the above-referenced study -

- Project Proposal
- Informed Consent Form

The Institutional Ethics Committee-Clinical Studies reviewed (through expedited review) and discussed the project proposal documents submitted by you at a specially convened meeting held on 7 July 2015.

The following members were present at the meeting held on 7 July 2015 at 2:00pm at Apollo Hospitals Educational Research Foundation, Conference Hall, Room No: 19, 2nd Floor, Krishnadeep Chambers, Wallace Garden, Chennai:

Name	Gender	Designation	Affiliation	Position in the committee
Dr. Rema Menon	F	Blood Bank Officer	Apollo Hospitals, Chennai	Member Secretary (Clinician)
Dr. Pradeep Kumar	M	Clinical Pharmacologist	Apollo Hospitals, Chennai	Member (Pharmacologist)
Dr. Rama Narasimhan	F	Senior Consultant- Internal Medicine	Apollo Hospitals, Chennai	SRSC Member (Clinician)
Dr. Sivagnanasundaram	M	Senior Consultant -	Madras High	SRSC - Member

Apollo Hospitals Enterprise Limited,  
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Email : ecapollochennai@gmail.com



## Institutional Ethics Committee - Clinical Studies

Reg. No. : ECR/37/Inst/TN/2013

		Endocrinology	Court, Chennai	(Clinician)
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The Institutional Ethics Committee-Clinical Studies reviewed the proposal, its methodology and design of the study. The proposed thesis work is approved in its present proposal without any modifications.

The Institutional Ethics Committee-Clinical Studies review and approval of the report is only to meet their academic requirement and will not amount to any approval of the conclusion / recommendations as conclusive, deserving adoption and implementations, in any form, in any health care institution.

The Institutional Ethics Committee-Clinical Studies is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

Regards,



Dr. Rema Menon,  
Member Secretary,  
Institutional Ethics Committee-Clinical Studies,  
Apollo Hospitals, Chennai.

Date: 7/7/2015

**MEMBER SECRETARY**  
**INSTITUTIONAL ETHICS COMMITTEE CLINICAL STUDIES**  
**APOLLO HOSPITALS, AHIL**  
**CHENNAI, TAMILNADU.**

### APPENDIX III

#### LETTER SEEKING PERMISSION TO USE THE TOOL

From

S.Shilpa Jabeen  
M.Sc (N) II year  
Apollo College of Nursing

To

The Principal  
Dr. Latha Venkatesan,  
Apollo College of Nursing

Through proper channel

Sub: Request for opinion and suggestion of experts for establishing content validity  
of Research tool.

Respected Madam

Greetings! As per the Curriculum Requirement the following research title is selected  
for the study.

**“A Pre Experimental Study to Assess the Effectiveness of Virtual Reality therapy  
upon Insomnia among Schizophrenic Clients at Selected Schizophrenic home,  
Chennai”.** I will highly privilege to have your valuable suggestions with regard to the  
establishment of content validity of Research tool. So I request you to validate my research  
tool and give suggestion about the tool.

Thanking you

Place:

Yours sincerely

Date:

S.Shilpa Jabeen

**APPENDIX IV**  
**CONTENT VALIDITY CERTIFICATE**

I hereby certify that I have validated the Research tool and interventional programme of Ms S.Shilpa Jabeen, M.Sc. (N) II year students who is undertaking research study.

**“A Pre Experimental Study to Assess the Effectiveness of Virtual Reality therapy upon Insomnia among Schizophrenic Clients at Selected Schizophrenic home, Chennai”.**

**Signature of expert**

**Name and Designation**

## **APPENDIX V**

### **LIST OF EXPERTS FOR CONTENT VALIDITY**

**1. Dr. LathaVenkatesan, M.Sc (N), M.Phil. (N)., Ph.D.(N),**

Principal and Professor in Maternity Nursing,

Apollo College of Nursing,

Chennai- 600 095

**2. Dr. Lizy Sonia. A, M.Sc.(N),**

Vice Principal and Professor in Medical Surgical Nursing,

Apollo College of Nursing,

Chennai-600 095

**3. Dr. Frenandez**

MD, DPM,FIPS

Chief, Psycholab

**4. Mrs. Anuradha.C. M.Sc.(N), M.Sc. (Psy)**

Associate professor,

Department of Mental Health Nursing

Apollo College of Nursing,

Chennai- 600 095.

**5. Mrs. Stella Mary. I, M,sc (N)**

Reader

Department of Mental Health Nursing,

Apollo College of Nursing

**APPENDIX VI**  
**RESEARCH PARTICIPANTS CONSENT FORM**

Dear participants,

I am M.Sc (N) I year student of Apollo College of Nursing. As a part of my study, a research study on **“A Pre Experimental Study to Assess the Effectiveness of Virtual Reality therapy upon Insomnia among Schizophrenic Clients at Selected Schizophrenic home, Chennai”**. The findings of the study will be helpful in reducing the insomnia in Schizophrenic clients.

I hereby seek your consent and cooperation to participate in the study. Please be frank and honest in your responses. The information collected will be kept confidential and anonymity will be maintained.

Signature of the researcher

I .....Hereby consent to participate and undergo the study.

Place:

Signature of the participant

Date:

## APPENDIX VII

### CERTIFICATE OF TRAINING IN VIRTUAL REALITY THERAPY



#### Medical Advance Research Foundation (Public Charitable Trust)

Recipient : Science Popularisation Award, Government of Tamil Nadu 2001 - 2002

**Managing Trustee :**

**Dr. M. KUMARESAN, M.S. (E.N.T.) D.L.O.**

MEMBER, POLITZER SOCIETY, USA

President, Madras - India Regional Chapter of the Acoustical  
Society of America

Secretary, Acoustical Foundation Education and Charitable Trust

Director, International Research Institute for the Deaf.

RECIPIENT OF NATIONAL AND STATE GOVERNMENT AWARDS

Managing Director, Bharath Institute of Para-Medical Sciences

Chairman, Bharath Community College.

**Office :**

**SIVA E.N.T. HOSPITAL**

No.159, Avvai Shanmugam Salai,  
Royapettah, Chennai - 600 014.

Tamil Nadu, India.

Phone : 2811 6807

E-mail : kumaresan@doctor.com

Cell : 98410 55774

**Research :**

**Virtual Reality Medicine**

Date :



#### Certificate Of Virtual Reality Therapy Completion

This is to Certify Miss.S.Shilpa jabeen, Msc.Nursing II year has Successfully Completed the  
Training for Virtual Reality Therapy Aim, Target People, Methodology, outcome Conducted  
from 07/05/2015 to 09/05/2015

## APPENDIX VIII

### PERMISSION FOR USING INSOMNIA SEVERITY INDEX SCALE



Gmail

Permission to use the tool



Inbox x



**shilpa jabeen** <shilpa.jabeen@gmail.com>

2:37 PM (1 minute ago) ☆



to charlesmorin ▾

Dear Mr.Charles Morin,

With due respect I Ms.Shilpa Jabeen Msc Nursing II year would like to state that, as a part of my curriculum requirement Iam planning to do a research entitled " An experimental study to assess the effectiveness of virtual reality therapy upon i isomnia among schizophrenic clients at selected home for schizophrenic clients, Chennai". For the same I would like to use Insomnia severity index Scale as one of my tool.(for academic purpose only).Please consider my request and grant me permission for the same.

Thanking you

**APPENDIX IX**  
**CERTIFICATE FOR ENGLISH EDITING**

**TOWHOMSOEVER IT MAY CONCERN**

This is to certify that the dissertation entitled "A Pre Experimental Study to assess The Effectiveness of Virtual Reality Therapy upon Insomnia Among Schizophrenic Clients at Selected Home for Schizophrenic Clients, Chennai" by S. Shilpa Jabeen.,II year M.Sc. Nursing student of Apollo College of Nursing, was edited for English Language appropriateness.

**Prof. J.L. NARASIMHAN**  
New No.8, Second Main Road,  
Block B - F1, Krishna Nagar,  
Chromepet, Chennai-600 044.  
Cell : 94446 54720  
e-mail : profjln@yahoo.com

  
Signature



**APPENDIX X**  
**CERTIFICATE FOR TAMIL EDITING**

**CERTIFICATE FOR TAMIL EDITING**

**TO WHOM SO EVER IT MAY CONCERN**

This to certify that the dissertation, "A Pre Experimental Study To Assess The Effectiveness Of Virtual Reality Therapy Upon Insomnia Among Schizophrenic Clients At Selected Home For Schizophrenic Clients, Chennai." by Ms.S.Shilpa jabeen, M.Sc Nursing II year student, was edited for Tamil language appropriateness.



Signature

**Headmaster**



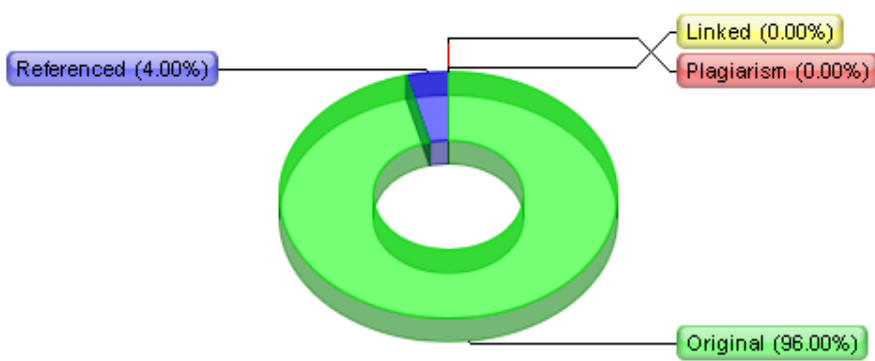
**T.N.D.T.A. Middle School**

**madankudieruppi - 62864**

**Alwarthirunagari Union**

# APPENDIX XI

## PLAGIARISM ORIGINALITY REPORT

	<b>Plagiarism Detector - Originality Report</b> Plagiarism Detector Project:[ <a href="http://plagiarism-detector.com">http://plagiarism-detector.com</a> ] Application core version:935										
Originality report details:											
<b>Generation Time and Date:</b>	08/06/2016 3:00:30 PM										
<b>Document Name:</b>	Shilpa Thesis.doc										
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<b>Important Hint:</b> To understand what exactly is meant by any report value - you can click, "Help image"  . It will navigate you to the most detailed explanation at our web site.											
<b>Plagiarism Detection Chart:</b>   <p>The chart is a 3D donut chart with four segments. The largest segment is green, representing 'Original' content at 96.00%. A small blue segment represents 'Referenced' content at 4.00%. Two very small segments, one yellow and one red, represent 'Linked' and 'Plagiarism' content respectively, both at 0.00%.</p> <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Original</td> <td>96.00%</td> </tr> <tr> <td>Referenced</td> <td>4.00%</td> </tr> <tr> <td>Linked</td> <td>0.00%</td> </tr> <tr> <td>Plagiarism</td> <td>0.00%</td> </tr> </tbody> </table>		Category	Percentage	Original	96.00%	Referenced	4.00%	Linked	0.00%	Plagiarism	0.00%
Category	Percentage										
Original	96.00%										
Referenced	4.00%										
Linked	0.00%										
Plagiarism	0.00%										
<b>Referenced 4% / Linked 0%</b>											
<b>Original - 96% / 0% - Plagiarism</b>											

## APPENDIX XII

### DEMOGRAPHIC VARIABLES PROFORMA FOR SCHIZOPHRENIC CLIENTS

#### Purpose

This proforma is used to measure the demographic variable such as age, sex, marital status, education, occupation, monthly income, type of family;

It is designed to assess the social and family details of the Schizophrenic clients

#### Instructions

Kindly read the following questions. Put a tick mark against the answers or fill in the blanks at the space provided. Please describe your responses. Freely and frankly. The details will be kept confidential and used for research purposes only.

#### 1. Age in years

- |                 |                          |
|-----------------|--------------------------|
| 1.1 20 - 30 yrs | <input type="checkbox"/> |
| 1.2 31 - 40 yrs | <input type="checkbox"/> |
| 1.3 41 - 50 yrs | <input type="checkbox"/> |
| 1.4 >50 yrs     | <input type="checkbox"/> |

#### 2. Gender

- |            |                          |
|------------|--------------------------|
| 2.1 Male   | <input type="checkbox"/> |
| 2.2 Female | <input type="checkbox"/> |

#### 3. Educational status

- |                                |                          |
|--------------------------------|--------------------------|
| 3.1 Illiterate                 | <input type="checkbox"/> |
| 3.2 Primary education          | <input type="checkbox"/> |
| 3.3 secondary education        | <input type="checkbox"/> |
| 3.4 Higher secondary education | <input type="checkbox"/> |
| 3.5 Graduate and above         | <input type="checkbox"/> |

#### **4. Marital status**

- |                        |                      |
|------------------------|----------------------|
| 4.1 Married            | <input type="text"/> |
| 4.2 Unmarried          | <input type="text"/> |
| 4.3 Widow/widower      | <input type="text"/> |
| 4.4 Separated/divorced | <input type="text"/> |

#### **5. Monthly income in Rs.**

- |                     |                      |
|---------------------|----------------------|
| 5.1 <10,000         | <input type="text"/> |
| 5.2 11,000– 15,000  | <input type="text"/> |
| 5.3 16,000 – 20,000 | <input type="text"/> |
| 5.4 > 21,000        | <input type="text"/> |
| 5.5 Not known       | <input type="text"/> |

#### **6. Religion**

- |               |                      |
|---------------|----------------------|
| 6.1 Hindu     | <input type="text"/> |
| 6.2 Muslim    | <input type="text"/> |
| 6.3 Christian | <input type="text"/> |

## APPENDIX XIII

### CLINICAL VARIABLE PROFORMA

#### Purpose

This proforma is used to assess the clinical variables such as medical illness, duration of medical illness, onset of illness, Duration of hospitalization and treatment seeking behavior.

#### Instructions

Kindly read the following questions put a tick mark against the answers or fill in the blanks at the space provided. Please describe your responses freely and frankly. The detail will be kept confidential and used for research purposes only

#### 1. History of any Medical Illness

- |                          |                          |
|--------------------------|--------------------------|
| 1.1 Diabetes mellitus    | <input type="checkbox"/> |
| 1.2 Hypertension         | <input type="checkbox"/> |
| 1.3 Arthritis            | <input type="checkbox"/> |
| 1.4 Respiratory problems | <input type="checkbox"/> |
| 1.5 Others [specify]     | <input type="checkbox"/> |
| 1.6 Nil                  | <input type="checkbox"/> |

#### 2. Duration Medical Illness

- |                  |                          |
|------------------|--------------------------|
| 2.1 <1 year      | <input type="checkbox"/> |
| 2.2 1- 5 year    | <input type="checkbox"/> |
| 2.3 6 – 10 years | <input type="checkbox"/> |
| 2.4 > 10 years   | <input type="checkbox"/> |
| 2.5 Nil          | <input type="checkbox"/> |

#### 3. Onset of illness

- |                  |                          |
|------------------|--------------------------|
| 3.1 Age in years | <input type="checkbox"/> |
|------------------|--------------------------|

**4.Duration of hospitalization**

4.1 0-1yr

4.2 2-3 yrs

4.3 4-5yrs

4.4 > 5 yrs

**5.Have you received any training or information on relaxation training before**

5.1yes

5.2 no

## APPENDIX XIV

### INSOMNIA SEVERITY INDEX

#### Purpose

The insomnia severity index has seven questions. The seven answers will be added up to get a total score. This is used to assess the severity of insomnia.

#### Instructions

For each question, please circle the number that best describes your answer. Please rate the current severity of your sleep problems.

#### 1. Difficulty in falling asleep?

None	Mild	Moderate	Severe	Very Severe
0	1	2	3	4

#### 2. Difficulty in staying asleep?

None	Mild	Moderate	Severe	Very Severe
0	1	2	3	4

#### 3. Problem in waking up too early?

None	Mild	Moderate	Severe	Very Severe
0	1	2	3	4

#### 4. How satisfied/dissatisfied are you with your current sleep pattern?

Very satisfied	Satisfied	Moderately satisfied	Dissatisfied	Very Dissatisfied
0	1	2	3	4

#### 5. To what extent do you consider your sleep problems to interfere with your daily functioning (e.g., daytime fatigue, ability to function at work/daily chores, concentration, memory, mood, etc.)?

Not at all interfering/A Little interfering/Somewhat interfering/Much Interfering/Very much				
0	1	2	3	4

**6. How noticeable to others do you think your sleeping problem is in terms of impairing the quality of your life?**

Not At All satisfied/A little satisfied/Somewhat satisfied/ Much satisfied/Very much satisfied

0

1

2

3

4

**7. How worried/distressed are you about your current sleep problem?**

Not At All worried/A Little worried/Somewhat worried/Much worried/Very Much worried

0

1

2

3

4

**Guidelines for scoring /interpretation:**

By adding the scores of all seven items (questions 1+ 2 + 3 + 4 + 5 + 6 + 7) = ..... total score

Total score categories.

0 – 7                = No clinically significant insomnia

8 – 14             = sub threshold insomnia

15 – 21            = clinical insomnia (moderate severity)

22 – 28            = clinical insomnia (severe)



**BLUE PRINT ON THE LEVEL OF SATISFACTION OF VIRTUAL REALITY  
THERAPY**

<b>S.No</b>	<b>Content</b>	<b>Item No</b>	<b>Total No of items</b>	<b>Percentage</b>
1	Virtual reality Therapy	1,2,3,4	4	--
2	Outcome of virtual reality therapy	5,6,7,8	4	--
3	Researcher's approach	9,10,11,12	4	--

## APPENDIX XV

### RATING SCALE ON LEVEL OF SATISFACTION REGARDING VIRTUAL REALITY THERAPY IN SCHIZOPHRENIC CLIENTS

#### Purpose

This rating scale is used to assess the level of satisfaction of the participants regarding virtual reality therapy.

#### Instructions

Please keep your frank responses to the questions given below. The information will be kept confidentially and will be used for research purpose only.

S.NO	Item	Highly satisfied 4	Satisfied 3	Dissatisfied 2	Highly Dissatisfied 1
1	I feel more comfortable About virtual reality therapy				
2	Duration of virtual reality therapy is sufficient for me				
3	I like to do it regularly				
4	It improves myself image				
5	I experienced decrease in mental stress				
6	My mind is relaxed after virtual reality therapy				
7	It improves my inner feelings and peace of mind				

8	I am able to cope up with sleep pattern effectively				
9	The researcher explained clearly about the intervention				
10	The researcher cleared all the doubts I had about intervention				
11	I am satisfied with the manner of demonstration				
12	The researcher is present throughout the procedure				

#### **LEVEL OF SATISFACTION**

<b>Score</b>	<b>Percentage</b>	<b>Level of satisfaction</b>
$\geq 36$	< 76-100%	Highly satisfied
23-35	50-75	Satisfied
11-22	25-49	Dissatisfied
1-10	1-24	Highly Dissatisfied

## மக்களை சார்ந்த விவரங்கள்

### நோக்கம்

வயது, பாலினம், திருமண நிலை, பணி, மாதாந்திர வருமானம், குடும்ப வகை போன்ற மக்களியல் சார்ந்த மாற்றத்தக்கவைகளை அளவிடுவதற்கு இப்படிவம் பயன்படுத்தப்படுகிறது. இது மக்களின் சமூக மற்றும் குடும்ப தகவல்களை மதிப்பிடுவதற்காக வடிவமைக்கப்பட்டுள்ளது.

### அறிவுறுத்தல்கள்

தயவு செய்து பின்வரும் கேள்விகளை படிக்கவும், பதில்களுக்கு அருகில் வழங்கப்பட்டுள்ள பெட்டிகளில் டிக் (✓) செய்யவும். அல்லது வழங்கப்பட்டுள்ள கோடிட்ட இடங்களை நிரப்பவும் தயவு செய்து உங்கள் பதில்களை சுதந்திரமாகவும் மற்றும் ஆராய்சி நோக்கங்களுக்காக மட்டுமே அவை பயன்படுத்தப்படும்.

#### 1. வயது (வருடங்களில்)

அ) 20-30

☐

ஆ) 31-40

☐

இ) 41-50

☐

ஈ) 50 க்கு மேல்

☐

#### 2. இனம்

அ) ஆண்

☐

ஆ) பெண்

☐

#### 3. கல்வி தகுதி

அ) கல்வியின்மை

☐

ஆ) தொடக்கக் கல்வி

☐

இ) உயர்நிலைக் கல்வி

☐

ஈ) பட்டப்படிப்பு

☐

உ) பட்டப்படிப்பு மற்றும் அதற்கும் மேல்

☐

#### 4.மதம்

அ) இந்து

ஆ) முஸ்லீம்

இ) கிறித்தவர்

#### 5. திருமணத்தின் வகை

அ) ஆனவர்

ஆ) ஆகாதவர்

இ) கணவனை இழந்தவர் அல்லது மனைவியை இழந்தவர்

#### 6.மாதவருமானம்

அ) 10000 க்கும் குறைவாக

ஆ) ரூ.11,000-15,000

இ) ரூ.16,000-20,000

ஈ) ரூ.>21,000

உ) தெரியவில்லை

## மருத்துவம் சார்ந்த மாறத்தக்கவைகள் படிவம்

### 1.எதாவது மருத்துவம்சார்ந்த உடல்நலக்கேடு

- 1.1 சர்க்கரை நோய் ☐
- 1.2 இரத்த அழுத்தம் ☐
- 1.3 மூட்டு வீக்கம் ☐
- 1.4 மூச்சுவிடும்பிரச்சனை ☐
- 1.5 பிற ☐
- 1.6 ஏதும் இல்லை ☐

### 2.எவ்வளவு காலம் உடல்நலக்குறைப்பாடு உள்ளது?

- 2.1 1 வருடத்திற்கும் மேலாக ☐
- 2.2 1-5 வருடம் ☐
- 2.3 6-10 வருடம் ☐
- 2.4 10 வருடத்திற்குள் ☐
- 2.5 ஏதும் இல்லை ☐

### 3.எப்பொழுது உடல்நலக்குறைப்பாடு தொடங்கியது?

- 3.1 வயது வருடங்களில் ☐

### 4.எவ்வளவு காலமாக மருத்துவமனையில் தங்கி உள்ளீர்கள்?

- 4.1 0-1 வருடம் ☐
- 4.2 2-3 வருடம் ☐
- 4.3 4-5 வருடம் ☐
- 4.4 5 வருடத்திற்கும் மேல் ☐

### 5.நீங்கள் இதற்கு முன்னாடி எதாவது பொழுதுப்போக்குபயிற்சி எடுத்துள்ளீர்களா?

- 5.1 ஆம் ☐
- 5.2 இல்லை ☐

## தூக்கமின்னை தீவிரத்தன்மை குறியீடு

### நோக்கம்

தூக்கமின்மையின் தீவிரத்தன்மை குறியீடு ஏழு கேள்விகளைக் கொண்டுள்ளது. ஒட்டுமொத்த மதிப்பெண்ணைப் பெற அந்த ஏழு கேள்விகளின் மதிப்பெண்ணும் கூட்டப்படும். இது தூக்கமின்மையின் தீவிரத்தன்மையை அளவிட உதவும்.

### அறிவுறுத்தல்கள்

ஒவ்வொரு கேள்விக்கும், தயவு செய்து உங்கள் பதிலை சிறப்பாக விவரிக்கும் எண்ணை வட்டமிடவும். தயவு செய்து உங்கள் நடப்பு தூக்கப் பிரச்சனைகளின் தீவிரத்தன்மையை மதிப்பிடவும்.

<b>1. தூங்குவதில் சிரமம்</b>				
கிடையாது 0	ஒரளவு 1	நடுத்தர அளவு 2	தீவிரம் 3	மிகவும் தீவிரம் 4
<b>2. தூக்கம் நீடிப்பதால் சிரமம்</b>				
கிடையாது 0	ஒரளவு 1	நடுத்தர அளவு 2	தீவிரம் 3	மிகவும் தீவிரம் 4
<b>3. வெகு விரைவாக விழித்தெழும் பிரச்சனை</b>				
கிடையாது 0	ஒரளவு 1	நடுத்தர அளவு 2	தீவிரம் 3	மிகவும் தீவிரம் 4
<b>4. உங்கள் நடப்பு தூங்கும் முறையில் நீங்கள் எவ்வளவு திருப்பியாய் உள்ளீர்கள் / அதிருப்தி கொண்டுள்ளீர்</b>				
மிகவும் தீவிரம் 0	திருப்தி 1	நடுத்தர அளவிலான திருப்தி 2	திருப்பியின்மை 3	மிகவும் திருப்தி 4

5. உங்கள் தூக்கப்பிரச்சனை தற்போது உங்கள் தினசரி செயல்பாடுகளில் எந்த அளவு குறுக்கிடுகிறது என்று நீங்கள் கருதுகிறீர்கள் (உதாரணம் பல்வேளையில் சோர்வு, மனநிலை, தினசரி செயல்பாடு, பணிகளை மேற்கொள்வதற்கான திறன், கவனம், நினைவுத்திறன், மனநிலை, இன்றும் பிற				
கொஞ்சமும் குறுக்கிடவில்லை 0	சிறிதளவு குறுக்கீடு 1	ஓரளவு குறுக்கீடு 2	அதிககுறுக்கீடு 3	மிக அதிக குறுக்கீடு 4
6. உங்கள் வாழ்க்கையை உங்கள் தூக்கமின்மை பிரச்சனை பாதிப்பது அடுத்தவர்களுக்கு எந்த அளவிற்கு தெரிகிறது				
முற்றிலும் தெரியவில்லை 0	சிறிதளவு தெரிகிறது 1	ஓரளவு தெரிகிறது 2	அதிகமாக தெரிகிறது 3	மிக அதிகமாக தெரிகிறது 4
7. உங்கள் தற்போதைய தூக்க பிரச்சனை உங்களை எந்த அளவு கவலை / துயரம் கொள்ளச் செய்கிறது				
கொஞ்சமும் கவலையில்லை 0	சிறிதளவு கவலை 1	ஓரளவு கவலை 2	அதிக கவலை 3	மிக அதிக கவலை 4

புள்ளிகளை கணக்கிடுதல், அர்த்தம் காணுதலுக்கான வழிகாட்டுதல்கள்

ஏழு கேள்விகளுக்கான அனைத்து மதிப்பெண்களையும் சேர்ப்பதானால் கிடைப்பது. (கேள்விகள்

1+2+3+4+5+6+7) மொத்த மதிப்பெண்கள்

0-7 = மருத்துவரீதியில் குறிப்பிடத்தக்க அளவு தூக்க மின்மை குறைபாடு இல்லை

8-14 = தூக்கமின்மை நோய்க்கான தொடக்கநிலை

15-21 = மருத்துவரீதியிலான தூக்கமின்மை நோய் (ஓரளவு தீவிரம்)

22-28 = மருத்துவரீதியிலான தூக்கமின்மை நோய் (அதிக தீவிரம்)



## தன் நிறைவு அளவுகோல்

### நோக்கம்

இந்த படிவம் பங்கு பெறுவோரின் தன் நிறைவை அறிவதற்காக அமைக்கப்பட்டுள்ளது.

### செய்முறை

கீழே உள்ள கேள்விகளுக்கு பதில்களை உண்மையாகவும், வெளிப்படையாகவும் அளிக்கவும் உங்களுக்கடைய பதில்கள் ஆராய்ச்சிக்காக மட்டும் உபயோகிக்கப்படும். உங்கள் பெயர் வேறு எங்கும் வெளிப்படமாட்டாது.

வ. எண்	கேள்விகள்	மிகவும் திருப்தி	திருப்தி	அதிருப்தி	மிகவும் அதிருப்தி
1.	மெய்ம்மை மருத்துவம் மிகவும் பயனுள்ளதாக இருந்தது				
2.	மெய்ம்மை மருத்துவ நேரம் போதுமானதாக இருந்தது				
3.	மெய்ம்மை மருத்துவத்தை தினமும் செய்ய விருப்பப்படுகிறேன்				
4.	மெய்ம்மை மருத்துவம் தன்னம்பிக்கையை உயர்த்துவதாக உள்ளது				
5.	மெய்ம்மை மருத்துவம் என்னுடைய மன அழுத்தத்தை குறைக்கின்றது (அல்லது) குறைப்பதாக உள்ளது				
6.	மெய்ம்மை மருத்துவம் முடிந்தபின் என் மனம் அமைதியாக இருக்கின்றது				
7.	மெய்ம்மை மருத்துவம் மூலம் என்னுடைய மன அமைதி அதிகரிக்கப்படுகிறது				
8.	என்னால் மன அழுத்தத்தை எளிதாக மேற்கொள்ள முடியும்				

9.	ஆராய்ச்சியாளர் இந்த மெய்ம்மை மருத்துவத்தை குறித்து விளக்கம் அளித்தது				
10.	ஆராய்ச்சியாளர் சந்தேகத்தை குறித்து விளக்கம் அளித்தது				
11.	நிகழ்ச்சியல் பங்கு பெறுபவரின் திருப்தி				
12.	நிகழ்ச்சி முழுவதும் ஆராய்ச்சியாளர் செலவழித்த நேரம்				

## **APPENDIX XVI**

### **CONTENT ON VIRTUAL REALITY THERAPY**

TOPIC	- VIRTUAL REALITY THERAPY
GROUP	- SCHIZOPHRENIC CLIENTS
PLACE	- DR. PETER FERNANDEZ HOME FOR SCHIZOPHRENIA
DURATION	- 4 WEEKS
METHOD OF TEACHING	- LECTURE CUM DISCUSSION
MEDIA OF TEACHING	- DEMONSTRATION
EDUCATOR	- II YEAR MSC (N) STUDENT, APOLLO COLLEGE OF NURSING, CHENNAI

## **GENERAL OBJECTIVE**

The schizophrenic clients will gain adequate knowledge and practical skill on virtual reality therapy to improve the sleep pattern.

## **SPECIFIC OBJECTIVES:**

### **AT THE END OF THE SESSION STUDY PARTICIPANTS ARE ABLE TO**

- Introduce the virtual reality therapy
- Define the virtual reality therapy
- State the uses of virtual reality therapy
- Illustrate the advantages of virtual reality therapy
- justify the need for virtual reality therapy upon insomnia among schizophrenic

SPECIFIC OBJECTIVES	CONTENT	LEARNING ACTIVITIES
Introduces virtual reality therapy	<p><b>Introduction:</b> Virtual reality is a technique that allows a person to participate actively in a sense of being present in the virtual environment. Virtual reality has been proposed as a new way of conducting exposure therapy because it can provide a sense of being present in a feared situation. This method appears to have several advantages over standard exposure therapy. Virtual is artificial and reality is what we experience. The field of Virtual reality is growing rapidly due to recent advances in artificial intelligence and computer graphics. It has been believed that artificial intelligence can help to improve human health and longevity. Virtual reality was invented by Morton H. Eilig in 1956. Virtual reality was introduced in medicine by Dr. Ralph Larson in the year 1990. He introduced virtual reality in medicine to treat his own fear of height (Acrophobia). At present virtual reality is being used as part of treatment. Prof.V.S.Ramachandran from the university of California is noted for his use of virtual reality and the neuro imaging – mirror neurons.</p>	Lecture cum discussion and Listening

Define virtual reality therapy	<p><b>DEFINITION:</b> Virtual reality is a form of technology which creates computer generated worlds or immersive environment, which people can interact with it. Virtual is artificial and reality is what we experience. So, the term virtual reality basically means “Near Reality” Virtual reality treatment refers to immersive, interactive, multisensory, viewer-centered, sensor, projector viewed theatre environment which can be explored and interacted with by a person. The person becomes part of this virtual world or is immersed within this therapeutic environment and whilst, they will be able to manipulate objects or perform a series of actions displayed on the screen. Thereby the person feels relief from his problems by permanently registering the positive effects in the brain.</p> <p>Virtual reality therapy is the simulation of physical presence in the real or imaginary world. Seeing the world through different eyes. Imagine being taken to a place - a virtual reality, Where there's relief from pain. You sleep soundly and your fears and inhibitions are momentarily taken away and the best part is There are no drugs or medication required.</p>	Lecture cum discussion and Listening
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<p>State the uses of virtual reality therapy</p>	<p><b>AIMS OF VIRTUAL REALITY THERAPY</b></p> <ul style="list-style-type: none"> <li>➤ To promote and protect peoples help throughout their lives.</li> <li>➤ To reduce the incidence of major diseases and injuries and to alleviate the suffering.</li> </ul> <p><b>USES OF VIRTUAL REALITY THERAPY;</b></p> <p>The virtual reality therapy is often used to help patients face and overcome insomnia. This can be done in a monitored, controlled, sensed, projector viewed theatre environment, tailored to the needs of each individual patient. It permanently registers positive effects in the brain.</p> <p>Rehabilitative programs for:</p> <ul style="list-style-type: none"> <li>➤ vertigo,</li> <li>➤ tinnitus,</li> <li>➤ vocal injuries,</li> <li>➤ stress,</li> <li>➤ headache,</li> <li>➤ dementia,</li> <li>➤ Parkinson's disease</li> <li>➤ Dementia</li> <li>➤ Schizophrenia</li> <li>➤ Insomnia,</li> </ul>	<p>Lecture cum discussion and Listening</p>
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<p>Illustrate the advantages of virtual reality therapy.</p>	<ul style="list-style-type: none"> <li>➤ Sinusitis,</li> <li>➤ Vertigo,</li> <li>➤ Voice care</li> <li>➤ Stuttering,</li> <li>➤ Behaviour Problems,</li> <li>➤ Contractures.</li> </ul> <p><b>ADVANTAGES OF VIRTUAL REALITY THERAPY;</b></p> <ul style="list-style-type: none"> <li>➤ Prevention of chronic diseases</li> <li>➤ Distraction of pain</li> <li>➤ Improves coping mechanism</li> <li>➤ Modulation of the effects of stimuli perceived by the brain</li> </ul> <p><b>NEED FOR VIRTUAL REALITY THERAPY UPON INSOMNIA AMONG SCHIZOPHRENIC CLIENTS:</b></p> <p><b>SCHIZOPHRENIA:</b> Schizophrenia is a psychotic condition characterized by a disturbance in thinking, emotions, volitions and faculties in the presence of clear consciousness, which usually leads to social withdrawal and insomnia. Insomnia is inevitable nowadays; insomnia affects the physical, mental and social wellbeing of a person. Imagination in this sense, not being limited to the acquisition of exact knowledge by the requirements of practical necessity, is, up to a certain point, free from objective restraints. The ability to imagine</p>	<p>Lecture cum discussion and Listening</p>
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<p>Justify the need for virtual reality therapy upon insomnia among schizophrenic</p>	<p>one's self in another person's place is very important to social relations and understanding. Virtual reality is a technique that allows a person to participate actively in a sense of being present in the virtual environment. Makes physical therapy interactive for insomnia &amp; Medical condition.</p> <p>A variety of signs and symptoms with insomnia. Some people with insomnia may complain of difficulty falling asleep or waking up frequently during the night. The problem may begin with stress. Then, as you begin to associate the bed with your inability to sleep, the problem may become chronic. Most often daytime symptoms will bring people to seek medical attention. Daytime problems caused by insomnia include the following: Poor concentration and focus Difficulty with memory Impaired motor coordination (being uncoordinated) Irritability and impaired social interaction Motor vehicle accidents because of fatigued, sleep-deprived drivers People may worsen these daytime symptoms by their own attempts to treat the symptoms.</p> <p>The virtual reality therapy helps to improve the co-ordination between mind and body. Exercise in reality affects many regions in the</p>	<p>Lecture cum discussion and Listening</p>
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<p>Demonstrate virtual reality therapy</p>	<p>nervous system and sets on the pleasure chemicals such as serotonin and dopamine that makes the person feel calm, happy and free. The benefits of virtual reality therapy include stimulation of sleep, improvement in memory, concentration, and motor activity. It also improves sleep during night time.</p> <p><b>VIRTUAL REALITY PLAY STATION</b> Virtual reality is an artificial environment created by software and projected by capturing the user by sensor. The user will be projected in the screen as a disease free user. The person suspends the belief of presence of disease and accepts the real environment. When the brain is preoccupied with virtual environment, it does not perceive other stimuli as effective as it otherwise good. This mechanism in turn, greatly lessens the sensation of real disease of the patient. The Virtual Reality replicates real life situation. Even though it may look like a game, but what we are doing is giving a very scientific prescription to rehabilitate yourself. The real time behaviors motions are captured by the sensor plug into the presentation media for creating rehabilitation applications.</p> <p><b>Game types</b> 20,000 Leaks plug In 20,000 Leaks, the player's avatar is in a glass cube underwater. The player positions his or her limbs and</p>	<p>Lecture cum discussion and Listening</p>
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<p>Describe the benefits of virtual reality therapy</p>	<p>head to plug cracks as crabs, fish, and bosses such as sharks and swordfish cause cracks and holes in the cube. As difficulty increases, up to five leaks must be plugged at a time to earn Adventure pins. Each game consists of three waves, which end when time expires or when all leaks are plugged. Extra time left over at the end of each wave is added to the Adventure pin total. This game makes the client to think more and motivates interest to gain more points than other clients among them. This makes them to participate actively and attentively in competitive way. Which helps the client to improve their sleep pattern.</p> <p><b>BENEFITS OF VIRTUAL REALITY THERAPY</b></p> <ul style="list-style-type: none"> <li>➤ Virtual reality stimulates sleep</li> <li>➤ Improve memory</li> <li>➤ Improve concentration</li> <li>➤ Reduce insomnia</li> <li>➤ Improve sleep during night time</li> <li>➤ Improve language skills</li> <li>➤ Improve creative thought</li> <li>➤ Improve cognitive skills</li> <li>➤ Improve decision making</li> <li>➤ Improves self- esteem</li> <li>➤ Lose weight</li> </ul>	<p>Lecture cum discussion and Listening</p>
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	<ul style="list-style-type: none"> <li>➤ Increases Creative thoughts</li> <li>➤ Good Physical Exercises</li> </ul> <p><b>CONCLUSION</b></p> <p>Virtual reality is a new way of conducting exposure therapy because it can provide a sense of being present in a feared situation. It stimulates the physical presence in real or imaginary world. More specially designed environments with user friendly atmosphere can be created which allow for broader virtual reality usage in treatment and research.</p>	
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**APPENDIX XVI**  
**DATA CODE SHEET**

**DEMOGRAPHIC VARIABLES**

**1.Age In Years**

- 1.1 20-30 Yrs
- 1.2 31-40 Yrs
- 1.3 41-50 Yrs
- 1.4 >50 Yrs

**2. Sex**

- 2.1 Male
- 2.2 Female

**3. Educational Status**

- 3.1 Illiterate
- 3.2 Primary Education
- 3.3 Secondary Education
- 3.4 Higher Secondary Education
- 3.5 Graduate and Above

**4. Marital Status**

- 4.1 Married
- 4.2 Un Married
- 4.3 Widow/Widower
- 4.4 Separated/Divorced

**5. Monthly Income in Rs.**

- 5.1 <10,000
- 5.2 11,000-15,000
- 5.3 16,000- 20,000
- 5.4 5.4 > 21,000
- 5.5 Not Known

**6.Religion**

- 6.1 Hindu
- 6.2 Muslim
- 6.3 Christian

## **CLINICAL VARIABLES**

### **1.Any Medical Illness**

- 1.1 Diabetes Mellitus
- 1.2 Hypertension
- 1.3 Arthritis
- 1.4 Respiratory Problem
- 1.5 Others [Specify]
- 1.6 Nil

### **2.Duration of Medical Illness**

- 2.1 <1 Year
- 2.2 1-5 Year
- 2.3 6-10 Years
- 2.4 >10 Years
- 2.5 Nil

### **3. Duration of Hospitalization**

- 3.1 0-1 Yr
- 3.2 2-3 Yrs
- 3.3 4-5 Yrs
- 3.4 > 5 Yrs

### **4. Received Any Relaxation Training Before**

- 4.1 Yes
- 4.2 No

**APPENDIX XVII**  
**MASTER CODE SHEET**

DEMOGRAPHIC VARIABLES							INSOMNIA SCORES	
Sample No	AGE	SEX	EDUC	M.S	M.I	REL	PRETEST	POSTTEST
1	1.2	2.2	3.5	4.4	5.4	6.1	23	0
2	1.4	2.2	3.2	4.4	5.5	6.1	22	1
3	1.2	2.2	3.3	4.2	5.1	6.1	18	6
4	1.2	2.2	3.4	4.2	5.5	6.1	16	7
5	1.2	2.2	3.5	4.2	5.5	6.1	11	2
6	1.2	2.2	3.4	4.2	5.3	6.1	18	3
7	1.2	2.2	3.4	4.2	5.5	6.1	11	0
8	1.2	2.2	3.4	4.2	5.1	6.1	22	6
9	1.2	2.2	3.5	4.2	5.3	6.1	23	7
10	1.2	2.2	3.4	4.2	5.5	6.1	11	2
11	1.2	2.2	3.5	4.2	5.5	6.2	16	0
12	1.2	2.2	3.5	4.2	5.5	6.1	18	1
13	1.2	2.2	3.4	4.1	5.1	6.1	16	6
14	1.2	2.2	3.5	4.1	5.5	6.1	18	0
15	1.2	2.2	3.4	4.1	5.5	6.1	22	1
16	1.2	2.2	3.5	4.1	5.5	6.1	23	7
17	1.2	2.2	3.4	4.2	5.5	6.1	22	2
18	1.2	2.2	3.4	4.2	5.5	6.3	23	3
19	1.3	2.2	3.5	4.2	5.1	6.1	11	0
20	1.2	2.2	3.3	4.2	5.5	6.1	16	6
21	1.2	2.2	3.4	4.2	5.4	6.1	18	2
22	1.2	2.2	3.2	4.2	5.5	6.3	11	3
23	1.2	2.1	3.3	4.2	5.5	6.1	18	0
24	1.2	2.1	3.5	4.2	5.1	6.1	22	7
25	1.2	2.1	3.5	4.2	5.5	6.1	23	6
26	1.2	2.1	3.3	4.2	5.4	6.1	18	2
27	1.2	2.1	3.3	4.1	5.5	6.1	16	1
28	1.2	2.1	3.4	4.1	5.5	6.1	22	3
29	1.3	2.1	3.5	4.3	5.5	6.1	23	7
30	1.1	2.1	3.4	4.3	5.5	6.1	18	0

## MASTER CODE SHEET

CLINICAL VARIABLES				
Sample No	AMI	DMI	D.O.H	RART
1	1.6	2.5	4.1	5.2
2	1.5	2.3	4.4	5.1
3	1.3	2.2	4.1	5.2
4	1.1	2.2	4.3	5.2
5	1.6	2.5	4.1	5.2
6	1.6	2.5	4.3	5.1
7	1.6	2.5	4.2	5.1
8	1.6	2.5	4.2	5.2
9	1.6	2.5	4.2	5.1
10	1.6	2.5	4.3	5.1
11	1.6	2.5	4.2	5.1
12	1.6	2.5	4.3	5.1
13	1.6	2.5	4.3	5.2
14	1.6	2.5	4.2	5.1
15	1.6	2.5	4.2	5.1
16	1.6	2.5	4.2	5.1
17	1.6	2.5	4.2	5.1
18	1.6	2.5	4.2	5.1
19	1.6	2.5	4.3	5.1
20	1.4	2.1	4.2	5.2
21	1.6	2.5	4.3	5.1
22	1.6	2.5	4.2	5.1
23	1.6	2.5	4.3	5.2
24	1.6	2.5	4.2	5.1
25	1.6	2.5	4.2	5.2
26	1.6	2.5	4.2	5.1
27	1.6	2.5	4.2	5.1
28	1.6	2.5	4.3	5.2
29	1.6	2.5	4.3	5.1
30	1.2	2.1	4.3	5.1



**APPENDIX XVIII**  
**PHOTOGRAPHS DURING DATA COLLECTION**



